THE BRICKBUILDER

VOL. 12 No. 6 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY JUNE 1903

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

ROGERS & MANSON,

85 Water Street, Boston, Mass. . . P. O. Box 3282.

Entered at the Boston, Mass., Post Office as Second Class Mail Matter, March 12, 1892.

Subscription price, mailed flat to subscribers in the United States and Canada	$5.00 per year
Single numbers	50 cents
To countries in the Postal Union	$6.00 per year

SUBSCRIPTIONS PAYABLE IN ADVANCE.

For sale by all newsdealers in the United States and Canada. Trade supplied by the American News Company and its branches.

ADVERTISING.

Advertisers are classified and arranged in the following order:—

Advertisements will be printed on cover pages only.

STRIKE LOSSES.

THE loss of money during the past year on account of strikes is something appalling. There seems to be some perverse tendency in trade unions which will not allow them to keep quiet while times are good and the workmen have an opportunity to earn money and which compels them to order a strike or somehow or other insist upon a snarl with employers just about the time when for every economic reason the workmen should be busily employed and laying up a store for the dull time which is sure to come in the future. The strikes which are now under way in New York City, it is estimated, have in thirty-two days tied up capital amounting to over two hundred million and involved a loss in wages to the workmen of something over thirteen million dollars, simply because of the persistence of the Board of Building Trades in supporting the unreasonable demands of a small union of unskilled men, the Building Material Drivers' Union. As to the right or wrong of these demands we would not undertake to say, but it would be useless to deny that mechanics about a building are to-day paid such wages that there ought to be no question of strike on that score. Bricklayers who, only a few years since, considered themselves well paid at thirty-five cents an hour are now receiving sixty-five and threaten to strike unless they get seventy. Plasterers are receiving five dollars a day, and the helpers, who can hardly rank as more than common laborers, three dollars and a half. Carpenters, plumbers and ironworkers receive four dollars and a half a day. What all these strikes will ultimately lead to is a question no one can determine, but the action of the General Contractors' Association in New York, in combining to protect themselves against the bad faith and extortion as practised by the workmen and by the unions, shows that there is a limit which might easily be reached, and that if wages advance very much more the inevitable result will be a general shutdown of all the building trades.

HOSPITAL PLANNING.

THE series of articles which Mr. Flagg has written for THE BRICKBUILDER, which are now appearing in serial form, relating to the planning of hospitals, emphasizes one point which is too frequently overlooked in the design of our modern structures of this sort, namely, the fact that at the best a hospital is a compromise, and that if the conditions could be ideal sick people instead of being brought together would be isolated entirely. The common ward in which from twenty to forty or fifty people are aggregated has absolutely nothing to recommend it except economy. Mr. Flagg calls attention to the mediæval hospital at Tonnerre, which in every respect of privacy is certainly far better than the most modern of our hospitals. In our endeavors to make our wards what we term germ-proof and to eliminate any fancied lurking places for noxious germs we do not always succeed in making the rooms attractive or of a nature which will help the patient to help himself by setting his mind at rest in peaceful, congenial surroundings.

THE UNIVERSITY OF PENNSYLVANIA.

THE University of Pennsylvania announces that M. Paul P. Cret will become assistant professor of design in the School of Architecture upon the opening of the next session. M. Cret is a native of Lyons, a prize graduate from the Lyons Fine Art School, and entered the Ecole des Beaux Arts at Paris in 1897, ranking number one among the candidates admitted. He received the Grande Medaille d'Emulation for 1900 and 1901, and is Architecte Diplomé par le Gouvernement Français. He comes to his new field of work with the highest recommendations of his professional associates, both compatriot and American. M. Pascal, his patron, gives him his distinguished and unqualified indorsement.

BRUCE PRICE.

BY the death of Mr. Bruce Price, which occurred a few days since in Paris, the profession loses a very illustrious member. Mr. Price was essentially a self-educated man, and one of the most instructive addresses we ever heard was a talk he made to the Boston Architectural Club a number of years since, in the course of which he described his early struggles to obtain an architectural education, and pictured his own lack of the helps which are now so readily within the reach of every student. He was born in Cumberland, Md., in 1845, and began his professional work in the office of Mr. Niernsée. He was in the late seventies recognized as a brilliant architect with great possibilities for original work. It was not, however, until some fifteen or twenty years later that his work found its best expression. About 1890 he made plans for a building for the New York *Sun*, in which he carried out in the most clever manner an adaptation of the spirit of the Campanile of St. Mark's. The design attracted a great deal of attention and really marked a distinct change in the manner of designing excessively tall buildings, the structure being treated as a tower with distinct base, shaft and crowning capital. Later on a modification of the same idea was developed into the design for the building of the American Surety Company, which can fairly take rank as in many respects the most consistent and certainly the most interesting tall building in this country. His name is also associated with the remarkable group of buildings which he designed near Lakewood for Mr. George Gould. The St. James Building in New York, Osborn Hall at Yale University, the station of the Canadian Pacific Railroad in Montreal, and the extremely successful and picturesque hotel in Quebec known as the Château Frontenac, are only a few of the many important structures which he was called upon to construct. Mr. Price's work was always characterized by great purity and refinement in all the details, and though during the later years of his life his business increased to a remarkable extent, he always put his personal imprint upon everything which left his office, so that there is a consistency throughout in his buildings. With the exception of a short partnership with Mr. Freeman and an earlier partnership with Mr. Baldwin, he was alone in business until about a year ago, when Mr. J. H. de Sibour was admitted to the firm. Mr. Price has been president of the New York Architectural League, and was identified with everything which stood for progress in the arts. Notwithstanding his large business he was always ready to speak a kind word to a young man, and many will remember him with feelings of gratitude for the help he has given to beginners.

BRUCE PRICE

PROFESSOR WILLIAM R. WARE.

PROFESSOR WILLIAM R. WARE has retired from the directorship of the Architectural Department of Columbia University, of which he has been the head for twenty-two years. The position Professor Ware has occupied has been unique. It is safe to say that nearly every prominent architect in this country over thirty-five years of age, and a vast number who are under that age, owe the greater part of their architectural education either directly or indirectly to him. He created the Architectural Department of the Massachusetts Institute of Technology in 1867, and guided its growth for sixteen years. During that period there was no other architectural school in the country which could at all compare with it, and the list of the names of those who have gone out from its ranks, coupled with those who have studied under and learned from Professor Ware's students, makes a roll of honor of which the profession may be proud and in which Professor Ware can feel a strong creative interest. Probably no one man is so well and so favorably known to the profession. While in partnership with Mr. Henry Van Brunt the firm did the largest and most successful business in Boston, including such structures as the Memorial Hall at Harvard, which in its way is one of the best of the university buildings. During the later years he has been tacitly acknowledged as a sort of general referee for all matters architectural, and has assisted in a great number of competitions both as adviser and judge, invariably winning the esteem of all upon whose work he has been called to pass.

The Planning of Hospitals.

(*Concluded.*)

BY ERNEST FLAGG.

IN the plans of French hospitals one will generally find beauty of arrangement combined with practical common sense and convenience. The logical bent of the French mind, with the artistic training which every French architect receives, is well calculated to produce good results. Figures 17 and 18 are typical French plans, admirable alike from the hygienic and artistic standpoints.

When hospitals are built in the midst of cities where land is expensive and where the area available is restricted and the wants are large, as is usually the case, the problem of hospital planning becomes more difficult, and the planner will have need of an uncommon endowment of intelligence and ingenuity to comply even imperfectly with the hygienic requirements without making what is thought to be too great a sacrifice of space, and in the number of beds. Under such circumstances it is too often the custom here to revert to the old block plan and to rely upon aseptic solutions and artificial ventilation to offset its bad qualities.

Figure 19 represents a type of plan used by the writer on very expensive land. The central block represents the Administration Building and the others the outlying pavilions, wards, etc. The buildings are all several stories high; the only staircases are in the Administration Building; these occupy the two lateral semicircular projections, and are within easy reach of the other pavilions. As there are no stairs or elevator shafts in the ward pavilions, and as great care was taken to make the floors air-tight, there is little chance of the air from one of the lower wards finding its way into one above. The connection between the Administration Building and the outlying pavilions is made at each floor level by diagonal passages open on both sides so that the air can circulate freely through them and around each pavilion, thus forming complete fresh air cut-offs, permitting the isolation of any ward or group of wards at pleasure. For the protection of the inmates in inclement weather each of these passages is furnished with a low covered way not high enough to interfere too much with the cross circulation of the air. This covered way is roofed and glazed and fitted with a contrivance which automatically opens a sash on its leeward side. Figure 20 represents a transverse section through one of these passages on one of the stories; "a" is the passage, "b" is the movable sash on the windward side, and "c" the corresponding sash on the leeward side. This sash remains open in the manner indicated, held there by the pressure of the wind on sash "b"; "d" is the floor above, and "e" the floor below, the full story height being indicated by "f." Figure 21 is an elevation of the same passage, the semicircular part of the opening being unobstructed for free passage of air as indicated by the arrows of Figure 20.

On expensive land the four-row arrangement of beds for wards will be found to have peculiar advantages. For instance, let us suppose a given plot of restricted dimensions, upon which it is desired to obtain as large a number of wards as possible. Let Figure 22 represent such a plot. Suppose we place upon it four wards of the ordinary kind for twenty beds each, as shown in Figure 23. Now suppose we place upon it the same number of wards of the other kind also for twenty beds each, as shown in Figure 24. Any one can see at a glance what an immense saving is effected in construction and how much more serviceable the two large shallow courts "a" of Figure 24 are for the proper lighting of the wards than are the three narrow courts "a" of Figure 23. It might even be possible to place six wards of this sort on the plot, as shown in Figure 25, and still have them better lighted than those of Figure 23, because although the courts are of the same width on both plans, those of Figure 25 are shallower and there is more chance for the light to enter the windows of the wards. This would seem to indicate an economy of fifty per cent in favor of the wide wards over those of the ordinary kind, as regards land occupied, and there would probably be a corresponding saving in the cost of construction.

Having determined the general arrangement of the plan, the architect's next care should be to decide upon the system of ventilation. The artificial ventilating system is a matter second only in importance to the general arrangement, and should receive attention and be incorporated into the plan at the very outset. It is too often a matter with which the architect does not much concern himself, and which is turned over to the ventilating expert after the preliminary plans are finished, to be installed by him as best he can. No place has been set aside or provided for the necessary ducts, and the expert is free to avail himself of any odd corners he can find or to make chases in the external walls where that can be done without too greatly weakening the piers. Sometimes the ducts have to be exposed, which is always unsightly and sometimes unsanitary, as the spaces between them and the walls and ceilings afford lodging places for dust and dirt. Under these conditions the ventilating engineer must necessarily work at a disadvantage, which is doubtless the cause of the unsatisfactory, complicated and unsanitary ventilating systems found in some of our most expensive hospitals. If the ventilating system is to be successful it should above all things be simple, which most of them are not. Vertical discharge flues of ample proportions should be provided, easy to clean and not in the exterior walls, where they are liable to be chilled and to work backwards upon any stoppage of the fans. Horizontal ducts should be avoided wherever possible, and when they are used care should be taken to arrange them so that they can be cleaned. Floor registers should not be used, nor should any system which works in a direction contrary to nature. Some hospitals have ventilating systems which draw the air down into the basement before it is discharged. Any such system must call for a large amount of horizontal ducts difficult to clean. It stands to reason that such ducts will soon accumulate quantities of hospital dust; then if anything happens to the machinery or if the fans are stopped for any cause the natural tendency of the system is to work backwards, and air enters the hospital after having passed through ducts coated perhaps with disease germs.

It is amazing to see to what an extent theory takes

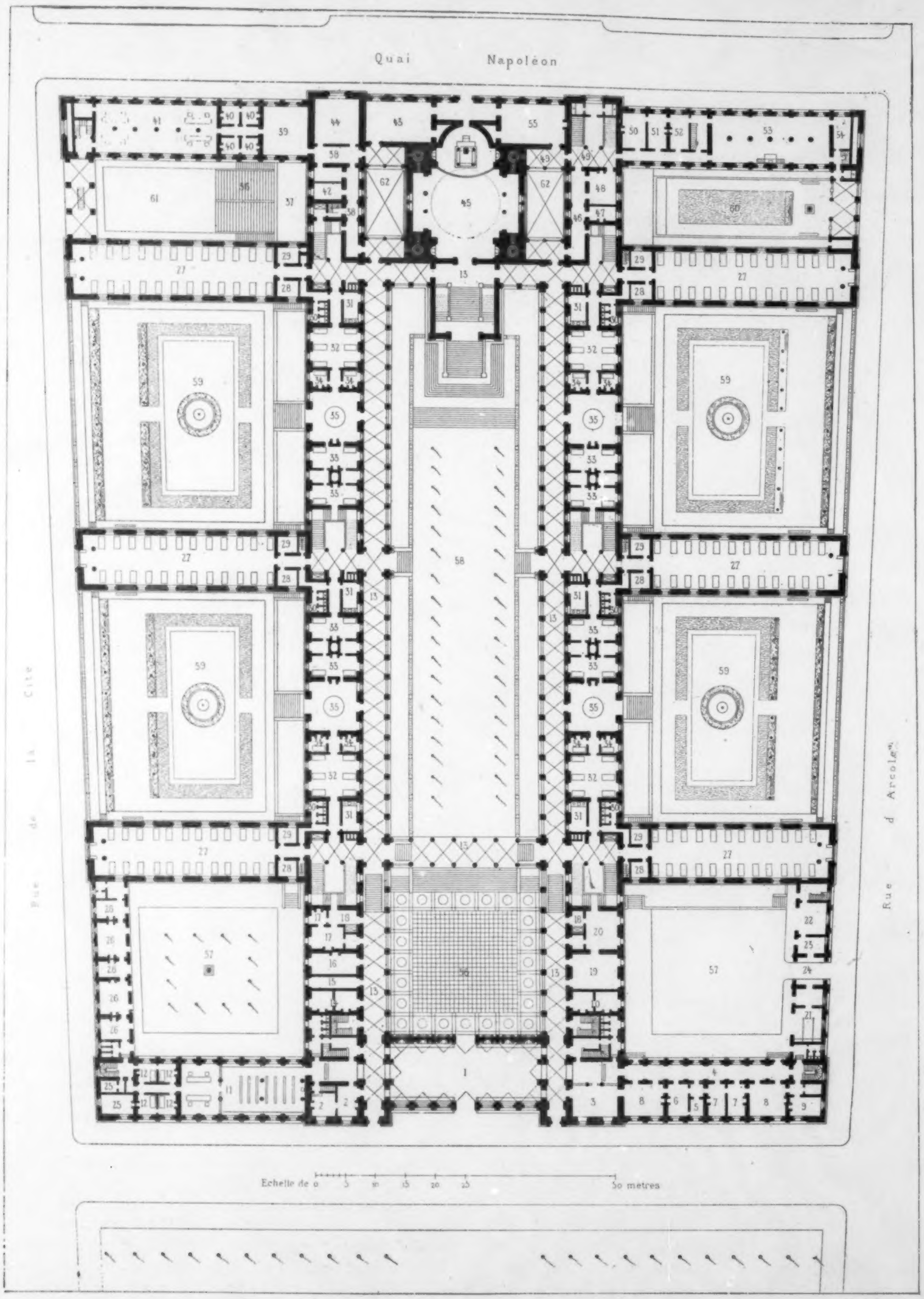


FIG. 17. PLAN OF HOTEL DIEU, PARIS.

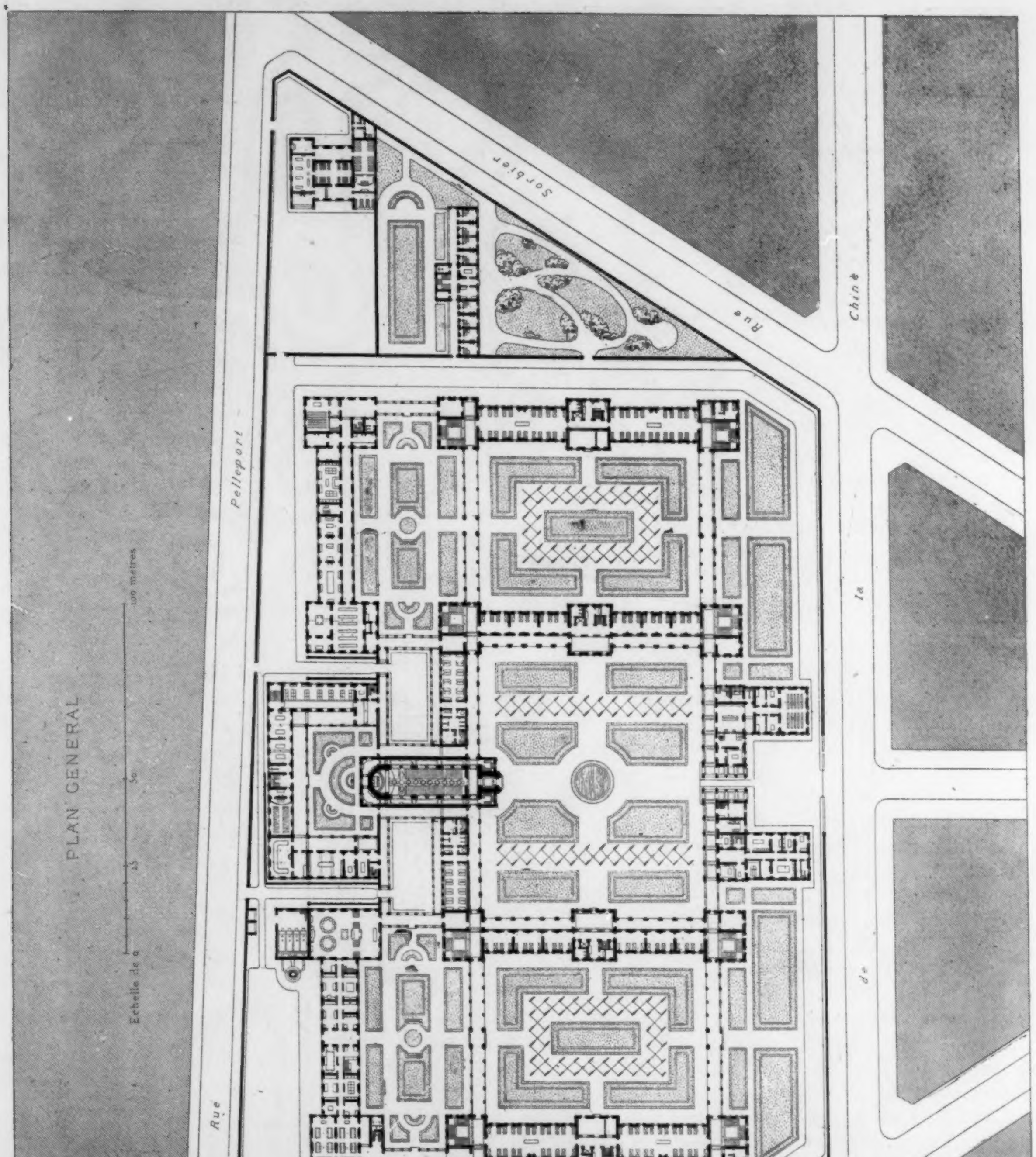


FIG. 18. PLAN HOSPITAL MENILMONTANT, PARIS.

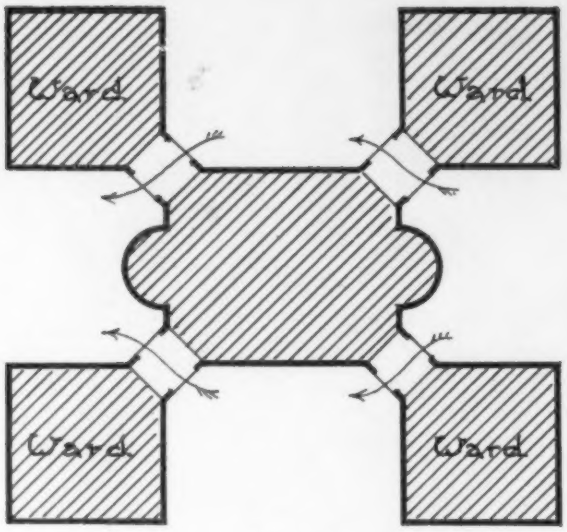


FIG. 19.

precedence of practical common sense in the arrangement of ventilating systems for hospitals. Very respectable authorities gravely argue that the exhaust ventilating ducts should be located in the floor under each patient's bed, on the theory that the air he exhales may be thus drawn down and discharged without passing over the bed of any other patient, and such systems are often put in at great expense. One would think that any one could see that no power short of a small whirlwind would accomplish the desired result, but if he were in doubt, a little smoke of the same temperature as the breath discharged from the place where the patient's head is to lie would afford a sufficiently convincing demonstration of the utter fallacy of the theory. Systems of this kind are apt to become a menace to the health of the institution; dust and dirt readily find entrance through the floor registers, and if great care is not taken the ducts will soon be very foul.

One often wonders why the open fireplace is so little used in hospital wards. It is the most simple and best of all ventilating agents. It cheers the ward, benefits the patients, and purifies all foul atoms which are drawn into it. With a properly constructed chimney, an open fireplace may be made to do an immense amount of ventilating, besides discharging the air which is drawn into it over the fire. The writer has an arrangement in his own house whereby every open fireplace, when lighted, is made to ventilate several rooms besides the one in which the fire is burning. The contrivance is simple and inexpensive, and might easily be applied to hospital wards, especially to those of small hospitals in country places where an electric current to operate the ventilating fans either cannot be had or is too expensive. Figure 26 represents a section through one of the chimneys spoken of. Figure 27 is a plan at the level "a," and Figure 28 a plan at the level "b"; "c" is the fireplace. For about two-thirds of the way up, the chimney is divided into a number of flues, some serving for fireplaces and some for ventilation; the upper third is in one large flue, into which all the other flues discharge. When a fire is lighted in the fireplace "c," all the ventilating flues begin to operate, and the suction is soon so great that if a pocket handkerchief were spread out on one of the exhaust registers it will be held in place.

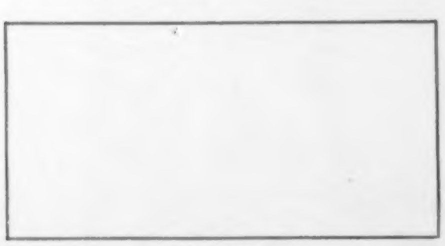


FIG. 22.

The method of taking in fresh air is not so important as that of exhaust, for there is not the same danger of contamination by foul ducts; but if the fresh air is taken in below and heated before entering the rooms, care should be taken not to draw it from directly off the ground, as is often done. It should be taken from a height of at least six or eight feet above the ground, and the higher the better, as the air will be purer and more free from dust and other impurities than if taken from near the ground. For this reason, and also as a matter of economy, there is much to recommend what is called the "direct-indirect" system, or the taking in of the air by openings at each floor level and passing it through box-base ventilating radiators, or by some other method heating it as it enters. But where this system is used there must be efficient valves for regulating the intake, and there is danger that nurses will use them to close the supply altogether. It is surprising to see how little many nurses and physicians under-

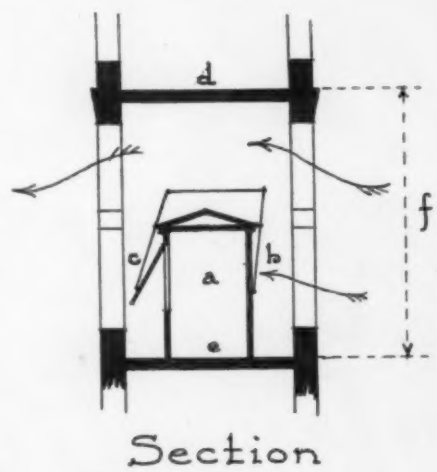


FIG. 20.

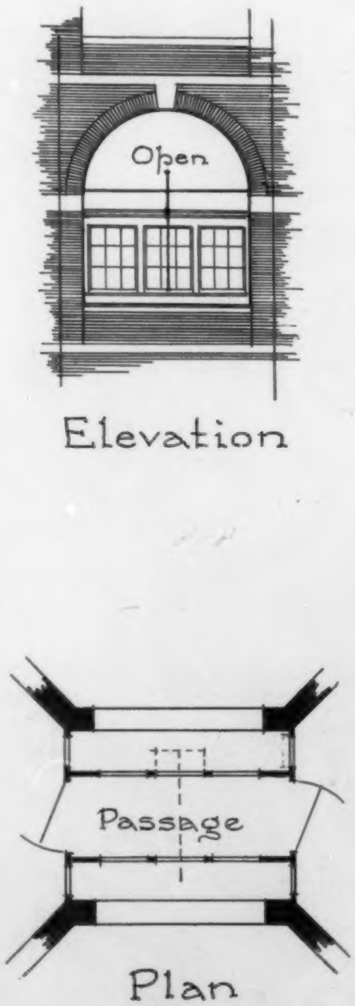


FIG. 21.

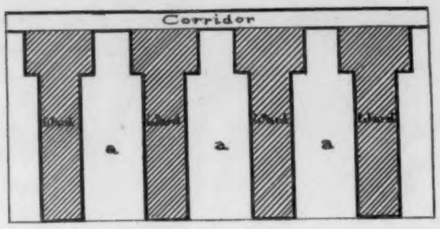


FIG. 23.

stand or care for ventilation. Any one who has had much to do with hospitals will recall numerous instances of costly and efficient ventilating systems which are either habitually out of use or altogether abandoned and standing idle, but of course this is not the architect's fault. If possible, both the ventilating and heating systems ought to be under thermostatic control. A plant of this kind installed at St. Luke's Hospital, New York, works so well that one of the nurses complained to the superintendent about the thermometers of the wards; she said she was sure they were out of order, for she had been watching them for weeks and they never moved at all.

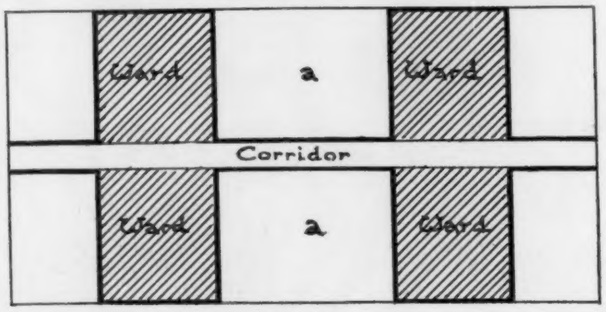


FIG. 24.

Some writers argue that the cross sections of wards should be in the form of a pointed arch, as shown in Figure 29. They argue that the air from the patients' lungs, being warmer than the surrounding air, has a tendency to rise, and care should be taken not to interfere with its progress upward until it escapes through an aperture along the ridge. This upward tendency, they say, may be facilitated by making openings along the sides under the eaves, so that air striking the sides of the building may be forced upward between the inner and outer covering of the roof until it escapes at the ridge, drawing with it the air from the interior. While it is undoubtedly true

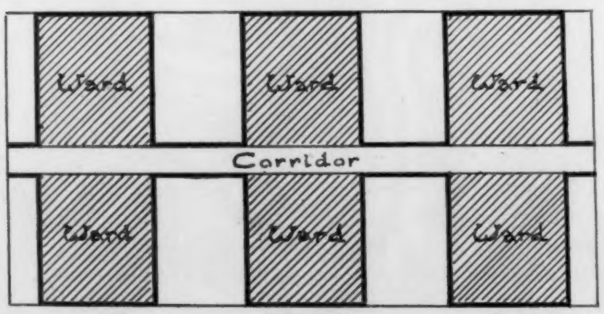


FIG. 25.

that this arrangement would work well in mild weather, and that this form of interior aids wonderfully in facilitating natural ventilation, it is equally true that it would not work well in cold weather, when ventilation is most needed. At such times all the heated air would immediately escape from the top, and its place be taken by a cataract of cold air falling from the ridge. Wards of this sort are practical, therefore, only in warm climates.

The best method of ventilating the wards, in our climate at least, seems to be to draw off the vitiated air through one or more apertures placed close to the floor, but not in the floor, opening into simple vertical ducts or aspirating flues, smooth on the inside and having a door at their base, so that they can be readily cleaned. The openings into the shaft are placed near the floor for the reason that the incoming fresh heated air lies near the ceiling, and as it gradually becomes cooled it falls. The air which has been longest in the room, being the coolest, lies nearest the floor and should be drawn off; the taking away of this cool stratum has a tendency to draw down the warm air and thus equalize the heat. It is best that the fresh heated air should be admitted at a point near the ceiling, so that it may not mix with the stale air near the floor. Where the direct-indirect system of heating is used the coils may either be suspended near the ceiling or else placed on the floor and encased with a metallic or other covering, having an outlet near the ceiling. Writers do not all agree upon

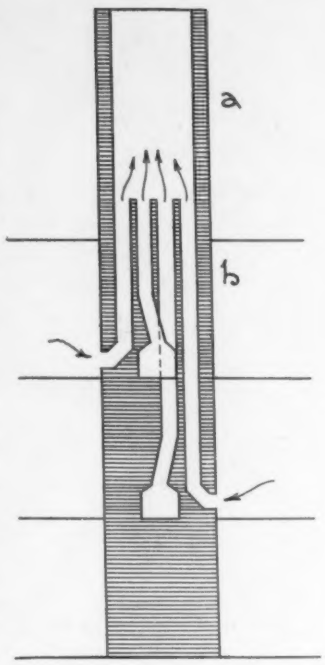


FIG. 26.

FIG. 27.

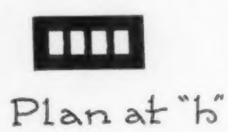


FIG. 28.

the amount of air which should be furnished for each patient per hour, but they do agree that there cannot be too much. Parkes says: "There can be no doubt that the necessity for an unlimited supply of air is the cardinal consideration in the erection of hospitals, and in fact must govern the construction of the buildings. For many diseases, especially the acute, the merest hovels with plenty of air are better than the most costly hospitals without it."

After the ventilation the next matter of importance to consider is the manner of construction and the choice of materials. For the exterior of course anything will do, but as it is desirable to give the buildings as cheerful an appearance as possible, it is best to choose some light-colored substance for the walls. Light-colored materials also have the advantage of reflecting more of the sun's rays, thus making the interior somewhat cooler in summer than if the exterior covering were dark. One very important matter is the damp-proofing. This should be extended across the cellar floor, through the walls and up the outside of them to the ground level. It is very

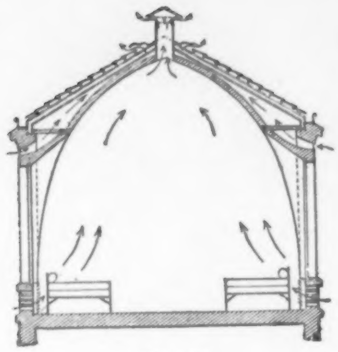


FIG. 29.

usual to take this precaution for almost all kinds of buildings in the larger eastern cities, but in smaller towns and in the South and West it is not so common. For hospitals it ought never to be omitted. If this precaution is not taken it would be better to omit the cellar altogether, at least under the ward pavilions. Most people have a mistaken notion that a cellar adds to the healthfulness of a building, while the contrary is the truth unless it has been damp-proofed.

When the Back Bay district of Boston was first laid out, many people were afraid to live in the houses because they could have no cellars, but experience soon demonstrated that they were the most healthful in the city. There is always a great deal of moisture in any soil, even the driest. If it were not so, trees and other vegetation could not exist. A growing tree requires an immense

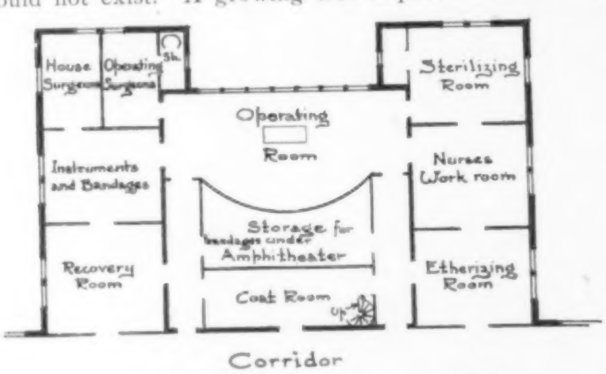


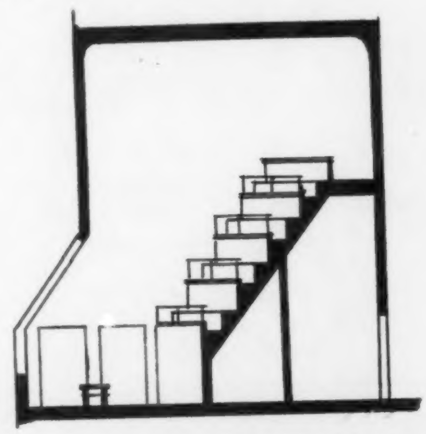
FIG. 30. PLAN OF OPERATING PAVILION.

amount of moisture, which it can extract from what appears to be very dry earth. One often hears people say their cellars are "as dry as a bone," but they are mistaken if the walls and floor have not been damp-proofed. The walls are always damp if they are in contact with the earth, and these walls are constantly giving off moisture into the cellar. When a masonry wall is in contact with the earth, it acts as blotting paper does when the edge is dipped in water; the moisture is carried up it by molecular or capillary attraction. General Viele held that this moisture could be carried to the top of a wall of almost any height. Most people do not realize it, but it is true that we breathe a great deal of cellar air in almost all our houses, especially in the winter when the furnace is going. If any one wants a convincing demonstration of this, let him create a smoke in his cellar and see how soon it will be noticed on the floors above. It is therefore essential that all cellars should be wholesome, and doubly so in the case of hospitals.

For the interior finish of the building it is important that the substances used should be non-absorbent and easy to clean. Great care should be taken to avoid all projecting moldings or other sharp corners and angles which are hard to clean, by rounding them.

For the walls perhaps no better material can be had than any one of the several brands of hard plaster in general use, painted with enamel paint; they are then non-absorbent and easy to clean. The ideal floor for a hospital has yet to be invented. Such a floor would be one of about the density of wood, easy for the feet, non-absorbent, which could be put down in a plastic state and the edges coved up to meet the plaster. Several makes of cement floor which meet all but one of these requirements have recently been put on the market; they fail, however, in being absorbent, and are therefore useless for the purpose. Dr. Langstaff of Southampton, England, recommended a paraffin treatment for wooden floors, which certainly worked well where it was tried in England. Whether it would work equally well in this climate, and with our method of heating which tends to make the wood expand or contract at different seasons, is, so far as the writer knows, yet to be determined. The paraffin is put on in a melted state, and ironed into the grain and joints with a box iron heated with burning charcoal. It is said to penetrate about a quarter of an inch into the wood. The excess of paraffin is scraped off and the floor is brushed with a hard brush, a little paraffin and turpentine are then put on, and the floor is good for years; at least this is the experience at the Southampton Infirmary where the method has long been in use. It may be that the same treatment applied to the cement floors spoken of might render them non-absorbent.

It is not, however, within the scope of this paper to consider in detail the various aseptic materials or methods which can be used to advantage, or to discuss the best sanitary appliances and their use. To do so would re-



Section through Amphitheater

FIG. 31.

quire a volume. It was simply the intention of the writer to speak in a general way of some of the more important features common to all hospitals. This is an age of specialties. We have all sorts of hospitals, — hospitals for women, hospitals for babies, cancer hospitals, eye and ear hospitals, lying-in hospitals, etc.,—each one of which requires of the planner special study. All large general hospitals and most other kinds are made up of many distinct parts or buildings, each one of which also requires careful study for its proper arrangement; there is the nurses' home, the out-patients' department, the obstetrical department, the pathological building, the administration pavilion, the steward's department, lodgings for the employees, etc.

We have considered, in a general way, the wards, their arrangement and planning. It may not be amiss to say a few words about the operating department. There is no part of a hospital where more money is usually spent than here. Of course no possible precaution should be left untried to make the surroundings as aseptic as possible, but the means employed, althongh they may be the most costly, are not always the best. Many of the materials used are more antiseptic in appearance than in reality. Marble doors, as heavy and hard to open as those of a safe, are often used, in spite of the fact that wooden ones, varnished, are much less absorbent, and that a surgeon ready to operate should not be obliged to handle a heavy door or, in fact, anything else. The doors ought to be so light and nicely balanced that they can be opened by a touch of the elbow. Tile floors, although they may look well and seem easy to clean, are really full of joints which are objectionable. Floors covered with sheet lead have been suggested for operating rooms, and although this does not sound very attractive, there is really a good deal to be said in its favor. It is smooth, need have no joints, is easy to clean, is noiseless, can be coved up to meet the wall surfaces, is non-absorbent, and is not affected by any of the acids used in an operating room. The only thing against it seems to be its appearance.

The arrangement of the operating department is a matter about which surgeons are very particular, and unless the planner has had a good deal of experience he is apt to have unpleasant things said about his work. For private operations the room need not be more than eighteen feet square. The lighting should be from the north. This side of the room should be practically entirely of glass, starting from about three feet from the floor; the window should be vertical for about three feet more, then slope back at an angle of about sixty degrees until it meets the ceiling, so that the operating table may be placed close under the light. The panes should be large and set in thin metallic muntins. There should be a room for the operating surgeons, opening from the operating room, with a light fly door which can be opened with a touch. This room should have a shower bath and basins with faucets and stoppers which can be operated by the feet. In large hospitals there should be another room for the house surgeons, the room for instruments and bandages and the sterilizing room should both open from the operating room, and the latter should connect with the nurses' workroom. The etherizing room and the recovery room should open directly from the corridor.

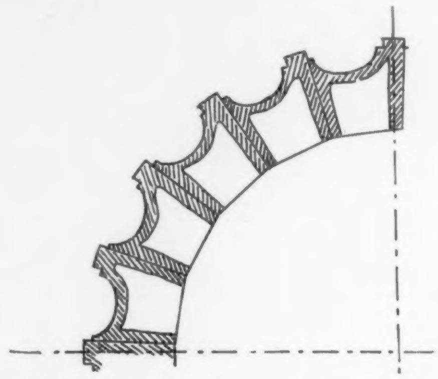
In operating theaters as generally planned the lighting is bad. Some operating theaters have glass roofs, but this makes the room too hot in summer, and the light is too high up.

Figures 30 and 31 represent a plan and a section of an operating theater and its dependencies arranged to overcome these difficulties. The lighting is the same as that recommended for the private operating room; a strong light is obtained for the operating table without interfering much with the comfort of the spectators in the amphitheater. The dependencies are arranged so as to bring each into convenient relationship with the others and with the operating room.

Hints on Design in Terra-Cotta.

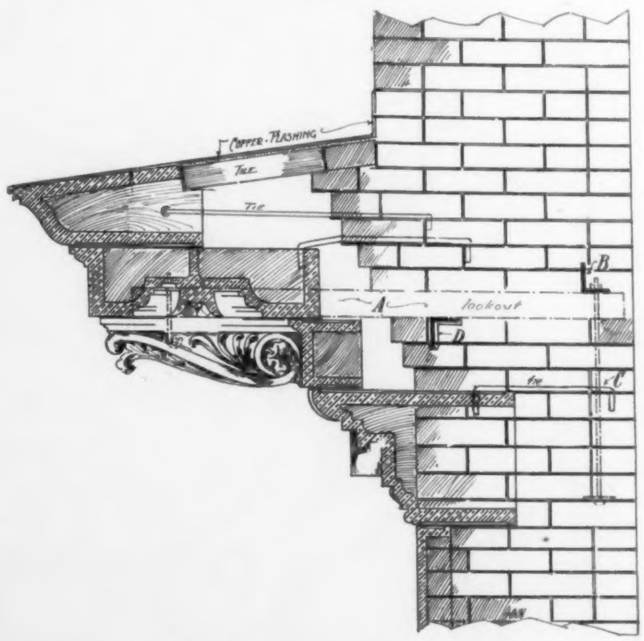
BY F. WAGNER.

TERRA-COTTA has characteristic qualities which distinguish it from stone. Some will try to hide them and imitate stone; the artist will emphasize them. The former get results which are "almost as good as stone"; the latter creates terra-cotta architecture.



SUBSTITUTE FOR THE PURE CLASSICAL FLUTE AND FILLET.

Terra-cotta is in many respects a better building material than stone, and there is no good reason for concealing its identity; but on the contrary the more it asserts its specific qualities in a design the better is the result.



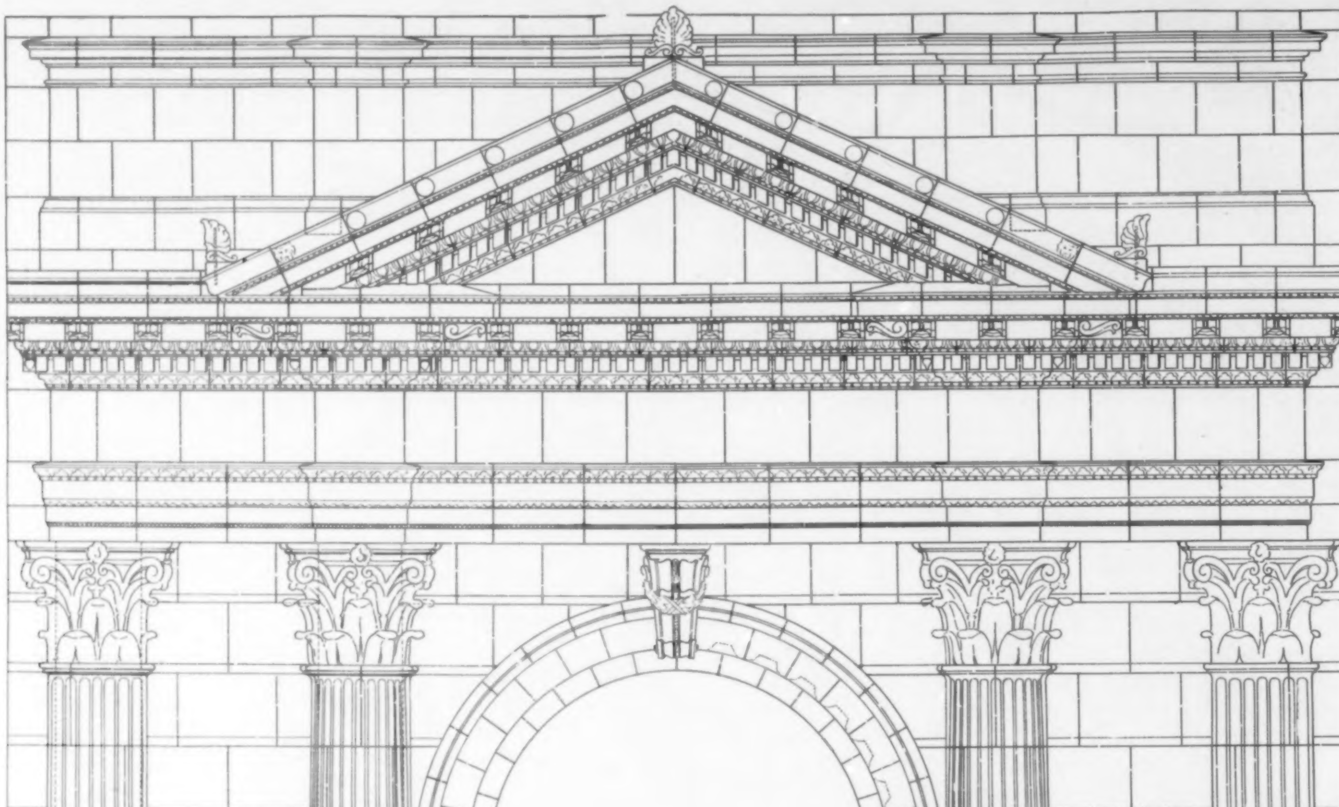
SECTION THROUGH A MAIN CORNICE.

Lookouts A held down by continuous L, B and rods C. D is a wall plate. Modillions are suspended from lookouts A, by means of clips and hangers.

As compared with stone, terra-cotta presents the following characteristics:

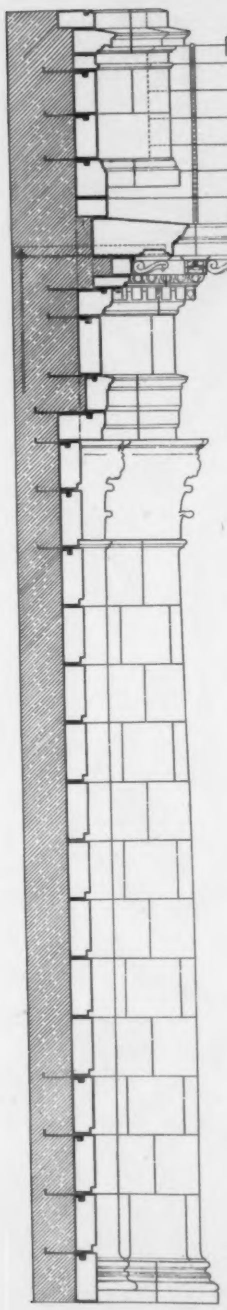
First. It has but one surface, which once destroyed can never be restored. This precludes the dressing of exposed surfaces of the finished ware.

NOTE.—The accompanying illustrations were furnished by terra-cotta manufacturers and are considered by them to be good examples of terra-cotta construction.

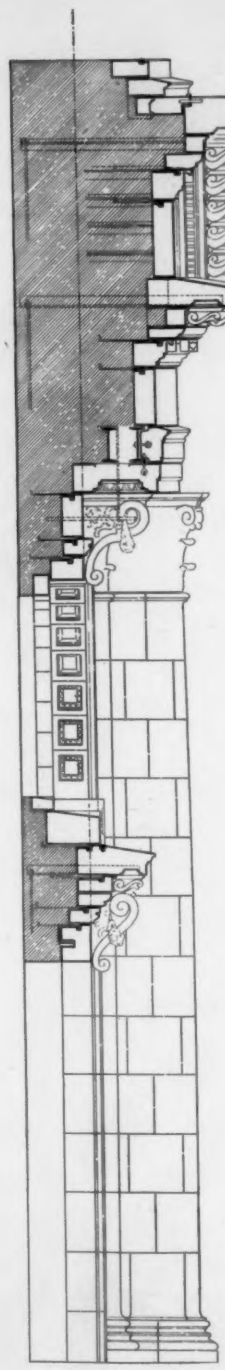


SUGGESTION FOR TERRA-COTTA ENTRANCE — ELEVATION.

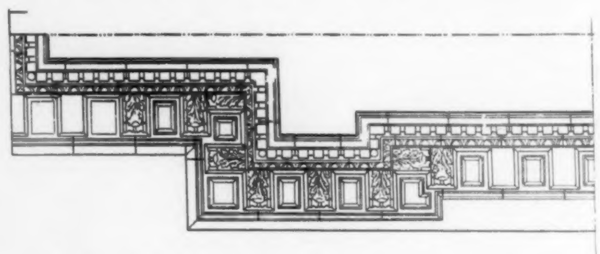
Second. It has a tendency to warp during the process of drying and burning. This tendency increases almost as the square of the larger axis, but decreases with the cross section. For this reason twelve-inch moldings can be made longer than four-inch moldings. In order to be filled with brick and for other practical reasons terra-cotta is usually open on the back. This, together with the irregular profiles of moldings, etc., increases the



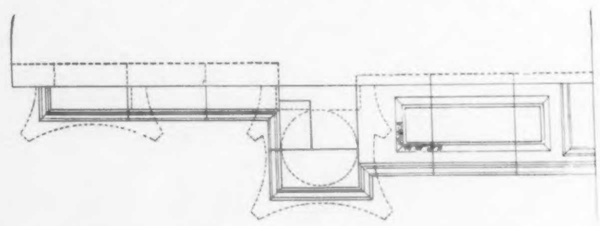
SECTION BETWEEN END PILASTER AND COLUMN, LOOKING TOWARD PEDIMENT.



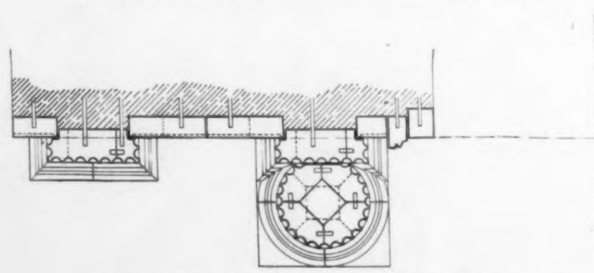
SECTION THROUGH CENTER.



SOFFIT PLAN OF CORNICE AT TOP OF FRIEZE.



SOFFIT PLAN SHOWING PANEL IN ENTABLATURE.



PLAN THROUGH PILASTER AND COLUMN.

DETAILS, SUGGESTION FOR A TERRA-COTTA ENTRANCE.

chances for warping. Circular columns, in which the tension is uniform in all directions, can therefore be made much longer, the practical limit being about ten feet. Three feet is unusually long for a twelve by twelve inch molding, while about one-half that length is the limit for a four by four inch molding. A plain ashlar is also open on the back and is very apt to warp, so that good results can hardly be expected if the size exceeds ten by twenty-four inches, although for cornices and parapets, where slight defects are not noticeable, larger sizes may be used.

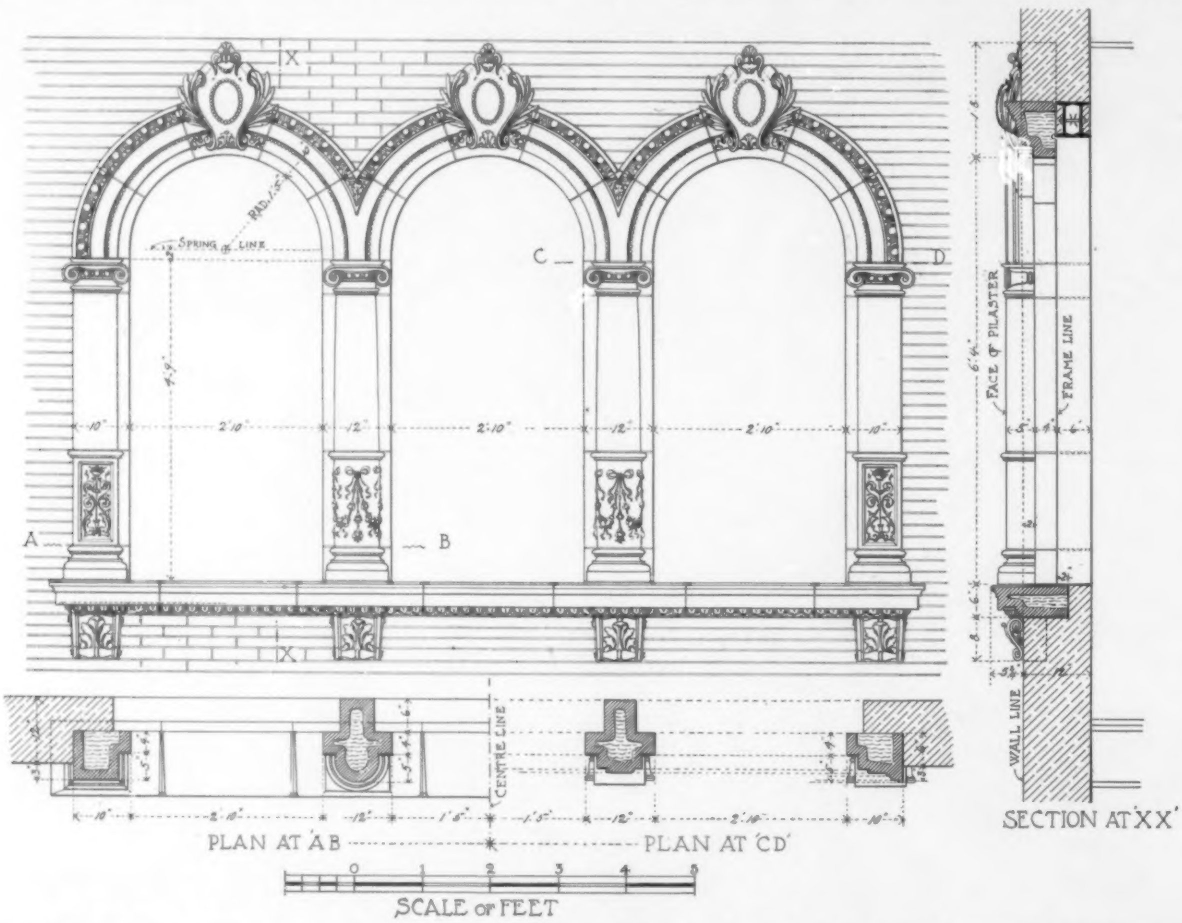
The comparative shortness of pieces led to the roll or lip joint for exposed washes, and this is a feature characteristic of terra-cotta. Many designers try to hide it, but it would be better to give it an artistic treatment and emphasize it.

Third. The size of terra-cotta decreases almost an inch to the foot from the time it is molded until it is burned. This shrinkage is carefully determined by experiment and provided for in making the molds; but it is always subject to slight variations, which are practically beyond human control. These deviations from the calculated shrinkage are approximately in proportion with the size of the pieces. In very long pieces, which are set up on end in the kiln, the weight assists the tendency to contraction, while the friction counteracts it to some extent on the ends upon which the pieces rest while drying and burning. In order to reduce these variations in shrinkage and the resulting imperfect alignment of the adjoining pieces to a minimum, the moldings should be so profiled that courses in close proximity to the eye should not be more than twelve inches high, and the same holds good of the arises of moldings around panels which cannot be separated. For work more remote from the eye this limit may be increased by about one-half.

As a rule, columns over six feet high are divided horizontally into a number of drums, depending on the length of the shaft, and up to a diameter of about two

feet it is possible, with the greatest care and at considerable expense, to make a fairly good fit of one drum upon the other, although a perfect fit can hardly be counted on when the diameter is more than sixteen inches. For columns more than two feet in diameter it becomes necessary to make vertical joints, in order to permit of the fitting and grinding of the various pieces, so as to produce a perfect alignment of the fillets. The most convenient way for the architect is to use the classic column, putting the joints in the flutes; but in this way terra-cotta lines are impossible. If vertical joints are objectionable, projecting or receding bands can be inserted between such blocks, thereby hiding the variation in length; or the ends of the blocks may be profiled so that the jamb can form a separate piece, then the ashlar between these jambs can be trimmed to proper size, and perfect joints and straight lines will be the result.

Fourth. Inasmuch as terra-cotta is nearly always made from molds, decorated surfaces can be obtained at a comparatively moderate cost. They not only enrich

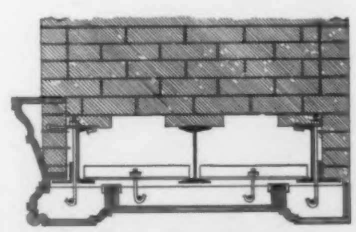


A triple window of somewhat ornate design can be made an attractive feature in any composition where surrounding conditions are at all favorable. The example here given could be introduced in many instances as a motif, subsidiary members being made to harmonize in proportion to the taste and dexterity of the designer. It has variety and symmetry to a greater degree than is usually met with, even in designs that would more than double the cost of execution. In the hands of a man familiar with the technical minutia of production, an elaborate design may be simplified and rearranged, from the manufacturer's point of view, without perceptible change in the general effect. On the other hand, over-elaboration is too often associated with unnecessary, time-consuming intricacy that renders the desired article impracticable on commercial grounds. This window is composed of forty pieces, which, with a few easily made changes in the clay, could be turned out of fourteen molds. Where two or three such windows could be used on the same building, or group of buildings, the cost would not exceed the average for comparatively plain work. Even for one window, it should not be a very abnormal figure. With a little modification in the height and proportions of columns and pilasters, lintels, etc., could be substituted for semicircular arches without appreciable increase in cost.

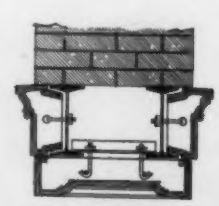
columns are not produced, they are simply imitations of marble columns. A true terra-cotta column should have a treatment which will allow of the use of vertical joint without making it an eyesore; or it should have projecting bands between the drums, which will make a perfect fit unnecessary.

A very neat substitute for the pure classical flute and fillet is shown in the accompanying sketch.

It is not difficult to produce pier blocks, say three feet long and twelve by twelve inches in section; but the length of these blocks will vary some, and if the ends are exposed and cannot be trimmed down to size, perfect

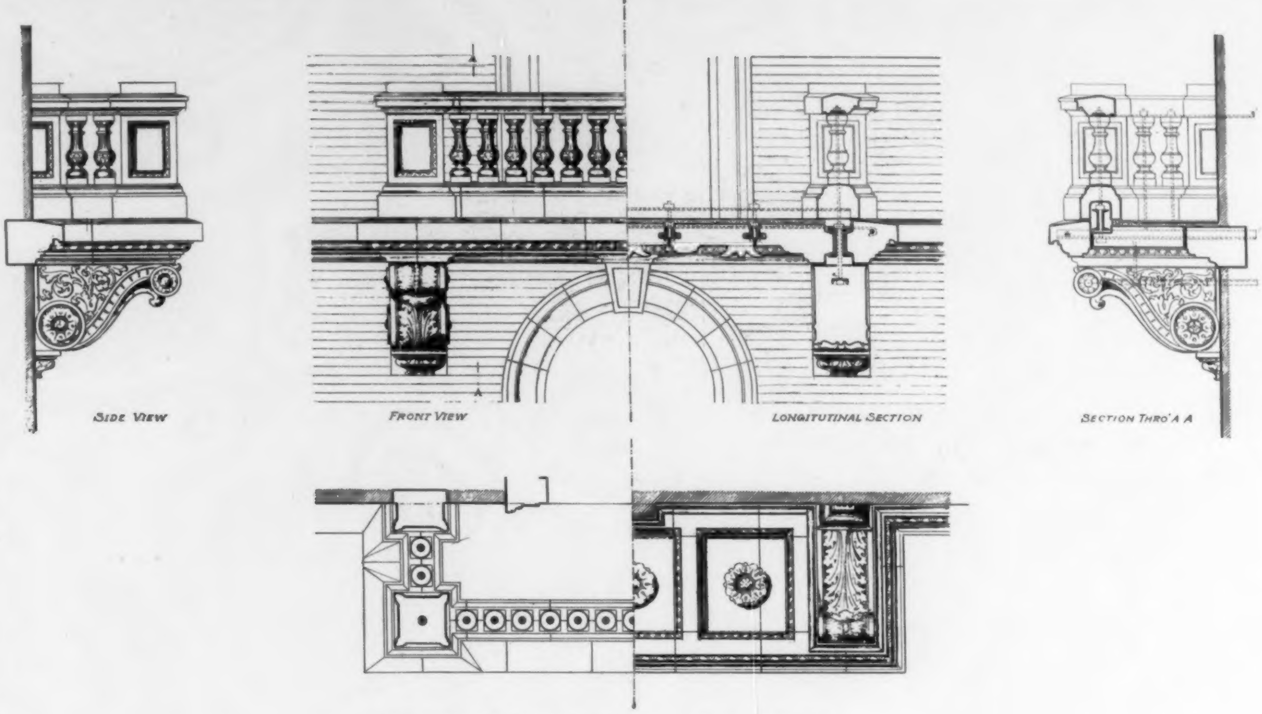


SECTION THROUGH SOFFIT, MAIN ENTRANCE.

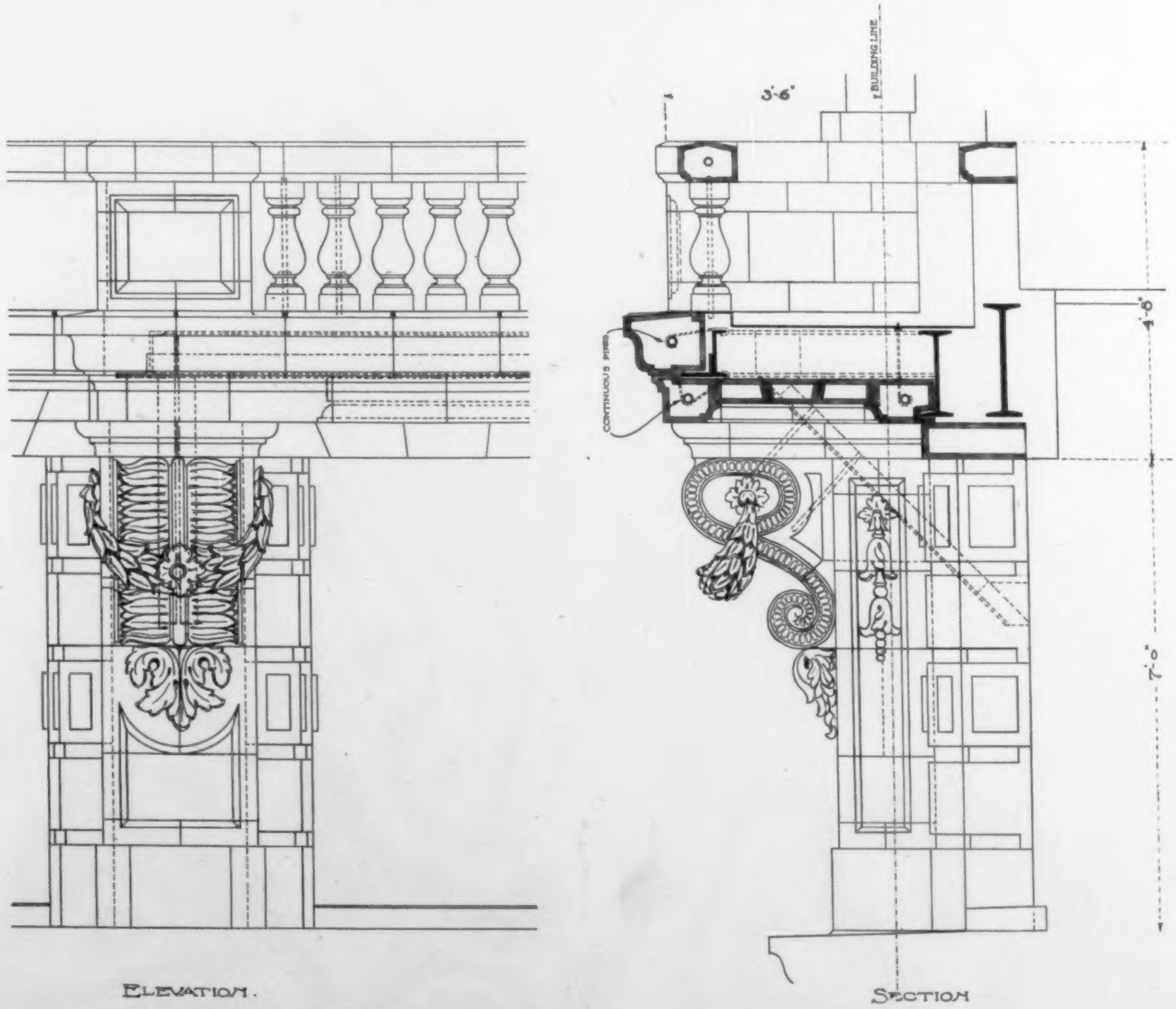


TYPICAL SECTION FOR COLONNADE ARCHITECTURE.

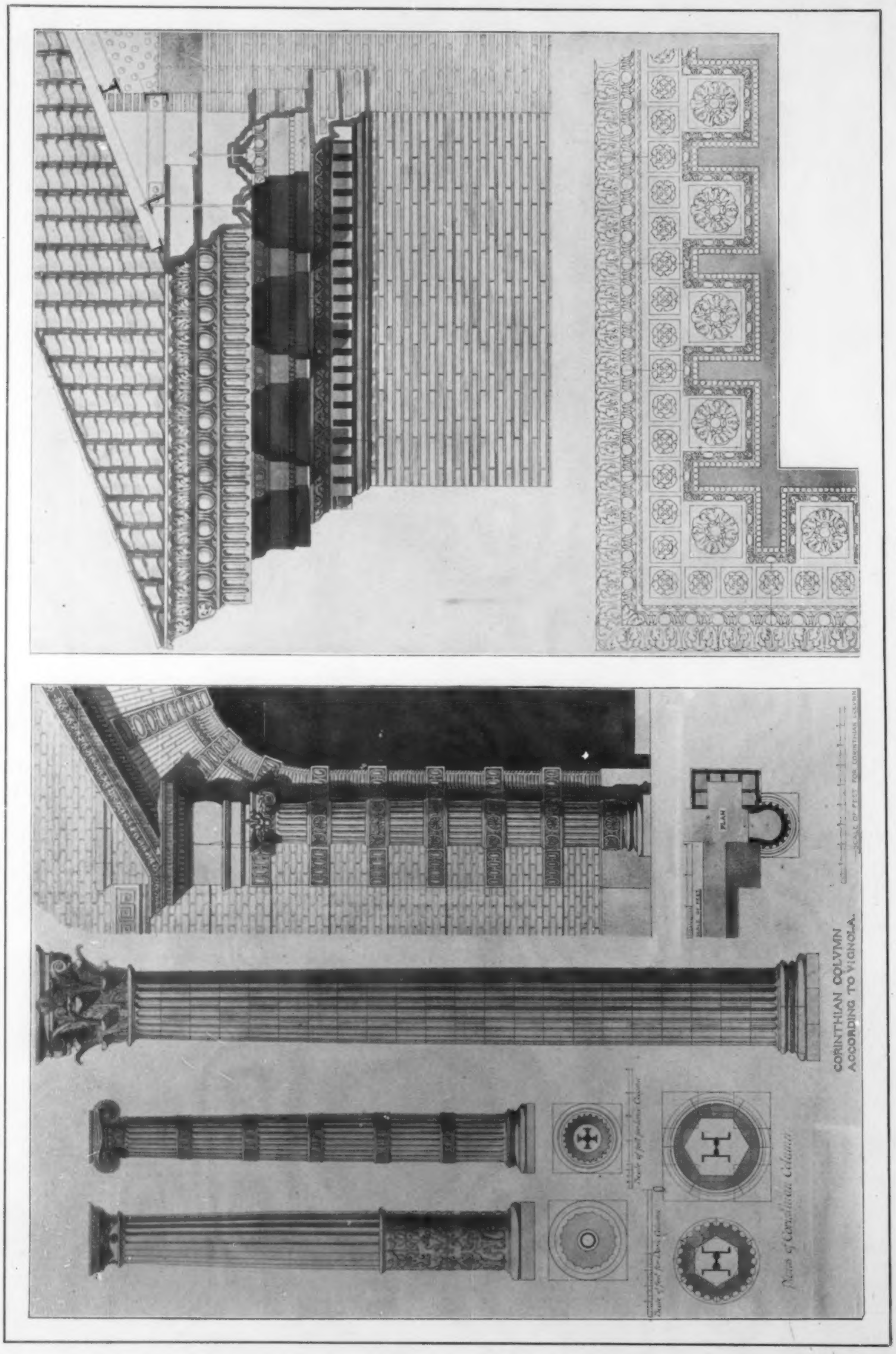
the design, but also assist in making the casual defects less conspicuous than in plain work.



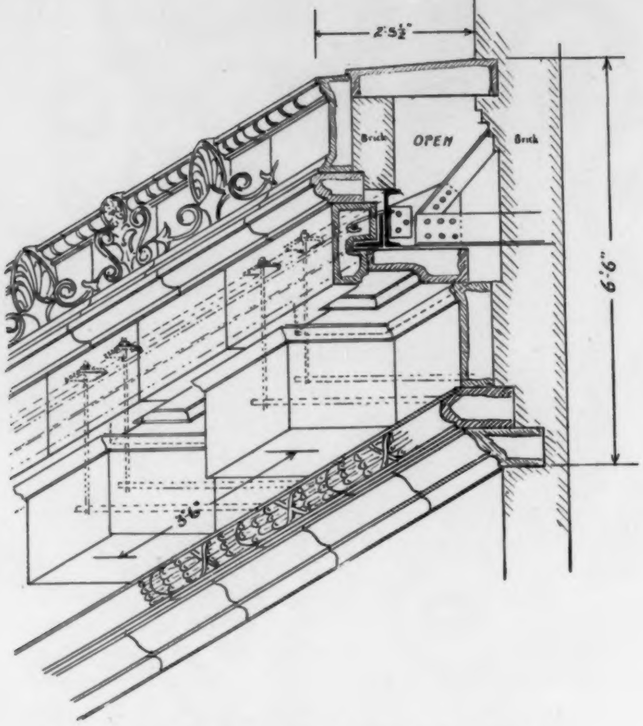
SUGGESTION FOR A TERRA-COTTA BALCONY.



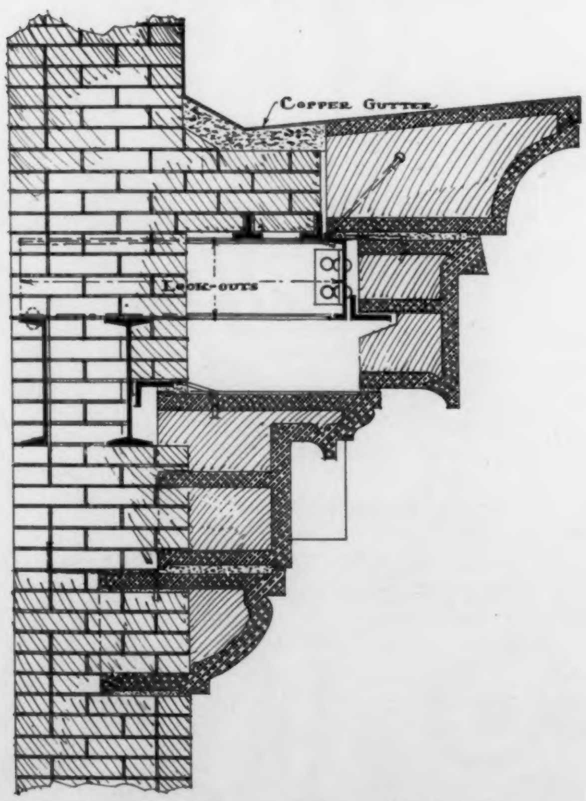
DETAILS OF CONSTRUCTION FOR A CENTRAL PAVILION.



DETAILS OF TERRA-COTTA CONSTRUCTION.



SECTION THROUGH A MAIN CORNICE.



SECTION THROUGH A MAIN CORNICE.

It is hardly necessary to add that terra-cotta, glazed, enameled and plain, offers an almost endless variety of colors, which can be used to emphasize the various architectural members, as well as to relieve the ornamentation by giving it a color different from that of the background.

Fireproofing.

Economics of Construction. II.

BY JOHN LYMAN FAXON.

IT may be well to preface this paper by saying that any building erected for income cannot be divorced from its business aspect as a paying investment; its construction and cost are primal factors which bear upon its character as an investment; its construction as to its life and repairs; its cost, life and repairs as to its gross and net per cent income. In the consideration of the subject in hand we base our estimates and conclusions on the use of the *best* and only the best materials, which adapt themselves to the different functions of structure, and that such estimates and conclusions are based upon computation, not guesswork. It is to be noted in nearly all papers which have been published on fireproof construction that the terms *iron* and *steel* have been used indiscriminately, synonymously, of same value and equivalent, when in fact there is an essential difference in respect to their structural value.

Of the buildings usually erected by the *steel*-frame system, office buildings, hotels and apartments predominate, and the general system of planning and construction is in the main so similar that they may be classed, constructively, as of one kind. In this and the next paper, after commenting on some elements more or less effective or impracticable, we will take up, for illustration, the construction, cost, rentals and per cent return of a simple type of office building.

In 1902 Professor C. L. Norton made some interesting and valuable experiments (see Report IV of the Insurance Engineering Experiment Station, also *Engineering Record* of November 8, 1902) in respect to the corrosion of steel and its prevention. Professor Norton opens his report by saying: "The constantly inrceasing use of steel as a structural member in modern buildings has led to many questions as to the permanency of the steel as sometimes used for this purpose. The examination of buildings ten to fifteen years old, when during alterations the steel framework has been exposed to view, reveals all stages and conditions of disintegration of the steel, etc. . . . But surely when a steel plate one-half inch in thickness loses more than one-eighth of an inch in five years there arises a question as to the ability of the structure to last more than twenty-five years." Further, in respect to the experiments: "The cleaning of the steel was the most troublesome problem met with. It was necessary to scour the pieces, then pickle in hot dilute sulphuric acid, and finally dip into hot milk of lime; when cold the lime was removed with a wire brush. This left the steel clean and bright, ready to put into the test bricks."

Fancy, if one can, such a process as that for the steel frame of any building, especially a skyscraper, also the cost. Also, "*Fifth*, it is of the *utmost importance* that the steel be *clean* when bedded in concrete. Scraping, pickling, a sand blast and lime should be used, if necessary, to have the metal *clean* when built into the wall."

We have italicized the words "utmost importance" and "clean" to emphasize what is unquestionably true.

We have a high regard for Professor Norton's ability, integrity of purpose and the value of his investigations: as we are also indebted to him for emphasizing by analogy our position, that a building of solid masonry construction in brick and terra-cotta is superior.

The value of his experiments and deductions is not only from the data obtained, but also in showing the impracticability of application; for to obtain the results illustrated by his experiments we need to be assured of three things: (1) that every member of a steel frame be absolutely *free* of corrosion before the cement coating is applied, which is out of the question so long as manufacturers of steel persist in putting the job and shop marks on the bare metal and so long as frames are erected in such manner as is now customary; (2) that all cement used be *free* of sulphates or sulphites of lime, which would involve the labor and expense, time and money, in testing every pound of cement used for the purpose; (3) an assurance of *the very perfection of care* in contractors and workmen, in the handling and assembling of members; that no piece be subject to abrasion and elements of atmospheric attack. Such a process and such *care* are not practicable in the nature of everyday affairs, short time contracts and competition in profits; for the extra cost involved would be prohibitive, and, expressed in business parlance, "will not pay"; for such extra cost means a material reduction in net per cent income.

Professor Norton in his experiments deals in laboratory science, not with the cold hard facts, demands and shortcomings of everyday practice, profit and loss, and hustle to get there. If such prevention of corrosion could be obtained, that alone will not insure a steel-frame building as a *fireproof* one; and that it is not, and cannot be as compared with solid masonry construction. Besides the steel-frame building is subject to other elements which in time will seriously affect its structural stability, especially so in excessively high buildings; one of the most potent is vibration, not alone from high winds, but by the constant, ceaseless, eternal vibration of the world, which will rack and strain the joints of structure to breaking pitch. No isolated part of a steel-frame structure should exceed in bulk proportions of six to four in length to width, or five to three in height to width; and aside from this, if an architect desires to prolong the life of steel supports, he should not design the columns with their bases below the level of the second floor for outside columns, or below the first floor for inside columns.

One of the most notable, able and experienced of American architects said some ten years back, "If I had my way, I would never again erect a steel-frame building." He spoke with a prophetic vision of a time to come. We are not inclined to be pessimistic or to condemn any system of building which is designed upon logical and sane principles; we are dealing with facts and imminent probabilities, known values and results; for the combined advantage of investors, architects and materials of tried and known consistency, tried by fire, the wear of time and the rack of the elements. Our endeavor is to bring architects to a sense of the signs of the times, a just conception of their responsibilities as *leaders* in thought and investigation — as it is their right of place to be — and owners and investors to a wise economy in the science of structure and lasting values of investments in buildings of right construction.

Time has demonstrated the inherent defect and danger — corrosion — of the steel-frame structure, and no process known at the present time will effect the elimination of such defect and danger or make such structures safe and permanent, except at such cost as to place such structures out of consideration from an investment point of view.

The question of structural stability and life can not be too urgently emphasized, not only in respect to first and secondary cost, but also in respect to the damage in case of collapse in the destruction of property and human lives; such damage is conceivable in terms of dollars and cents, but one may well stand appalled at the sum of consequences. The older buildings of the steel-frame system have now covered a span of time, or are rapidly approaching it, in which the destructive force of corrosion has been going on steadily, inexorably, to a degree exceeding 50 per cent of the original structural efficiency, and no one can say when the day or hour cometh when some of these buildings will come down in a confused, disorganized and awful heap of dust and junk, a shapeless and hideous commentary on the vanity of human efforts, destroying millions of property and hundreds, perhaps thousands, of our fellow beings.

Disasters never come heralded from the house tops. Such a disaster will be instantaneous in effect, — a weird and ghastly tragedy.

A building may catch fire with some good chance of 95 per cent of the occupants getting out alive and the saving of property, but in case of a collapse of a steel-frame building there is small likelihood of any premonitory signs. It will give way in an instant and be down in the time of a wink.

The time has come, and now is, when the owners of existing buildings and those contemplated should stop and think, and guard against present and future dangers, and take measures of prevention by investigating the present conditions of buildings ten to twelve years old, and the adoption in new buildings of a system of structure that will be safe and permanent.

The total fire loss in Boston in 1902 was $1,570,533.25 in buildings and contents, not including loss of rentals and business; total insurance, $18,986,710.95; total insurance loss, $1,481,723.88. Such loss would build five or six small office buildings *absolutely fireproof.*

The loss by the conflagration at Paterson, N. J., approximated $10,000,000 (loss and interest) and covered an area of about fifteen acres. This loss would build eight-story fireproof buildings over about a third of the building area of burnt district. This fire also emphasized the value of an approximation to all masonry construction, also the value of cast iron columns over steel columns. Cast iron columns rightly made and protected with four inches of terra-cotta encasement are superior to steel and almost, if not quite, as good as piers of solid masonry in respect to fire attack and are indestructible by corrosion.

Another point: under present practice it is customary to erect steel frames weeks and months before the encasement is placed around them, thus exposing the frames to atmospheric attacks, storms, vibrations and damage by working on it, hoisting and shifting all sorts of heavy

materials over and against it. The frame should not go up in advance of the encasement if one desires to attain some prevention of corrosion, minimize damage and prolong life. We note in some buildings now being erected the practice of painting the encasement of the steel supporting members (on the inside of the building); this is a mistake, for it will simply retard the evaporation of the moisture within the encasement and accelerate the propagation of corrosion.

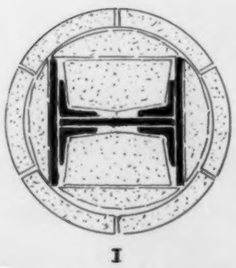
No encasement of columns should be other than of circular form; also such members should be used in the make-up of columns as are best adapted to the maximum amount of fireproofing, the smallest number of joints and minimum exposure of surface to corrosion and fire attack. The sections for columns in general use may be classed under two heads, the *open* and the closed or *box* types. Of all of them, the + and the simple H (without flanges) are the best types.

OPEN TYPES.

BOX TYPES.

In general it may be said that no columns having *internal air cells*, or made with flange members so placed that terra-cotta blocks cannot be easily placed against inside members, should be used. Also that no box girders should be used; that the single I type of girders should be used, not II or III.


H


I

Another element of economy in construction in any class of building, and especially so in a steel frame, is that the plan should be laid out on a system of *units*, having right angles, and with close approximation of economical use of standard lengths of I's and plates, 30 feet, 40 feet, 50 feet, 60 feet lengths. This makes for quite an appreciable saving in cost.

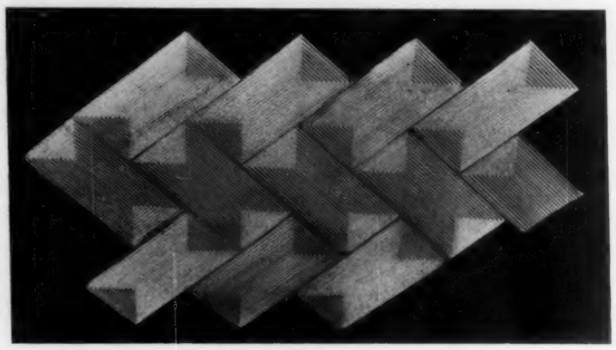
FIREPROOF HOTELS.

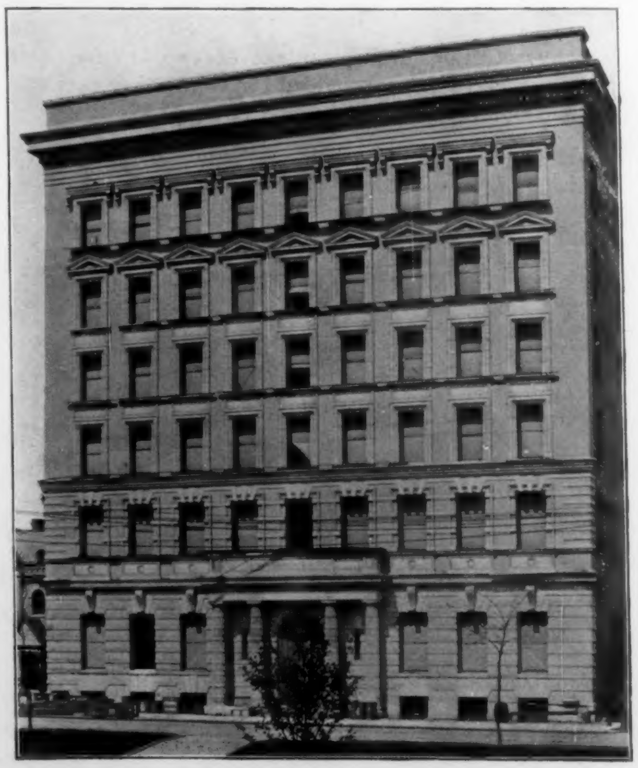
THE building laws of our larger cities now require all hotels to be built of fireproof construction. The tendency is moreover in most of the cities to insist upon fireproof construction for schoolhouses. The statement is often made that fireproof construction for a schoolhouse is a luxury, for the reason that so far as the records show human life has never been lost as a result of a fire in a schoolhouse. As against this we find noted in one of our exchanges a statement of the fact that during the past year in this country 546 schoolhouses were destroyed by fire and 1,378 hotels were burned down.

Selected Miscellany.

CHICAGO'S PARKS.

AS a result of the election held in Chicago on the first day of this month (June) the city has an assurance that not less than five hundred acres will be added to its park area without any delay whatsoever. Time was when Chicago had the largest park area in proportion to population of any city in the country. The enormous growth of the city both in population and acreage, without a corresponding increase in parks and boulevards, has brought it down to the lowest rank as compared with other American cities. The increase has only been in mileage of new boulevards, or streets under the control of the several park commissions, but that has


GUASTAVINO CORRUGATED TILE SHOWING LIGHT AND SHADE EFFECTS.


Y. M. C. A. BUILDING, TOLEDO, OHIO.
E. O. Fallis, Architect.
Terra-Cotta by the New York Architectural Terra-Cotta Co.

APARTMENT, NEW YORK CITY.
Built of "Shawnee" Brick. Thorn & Wilson, Architects.

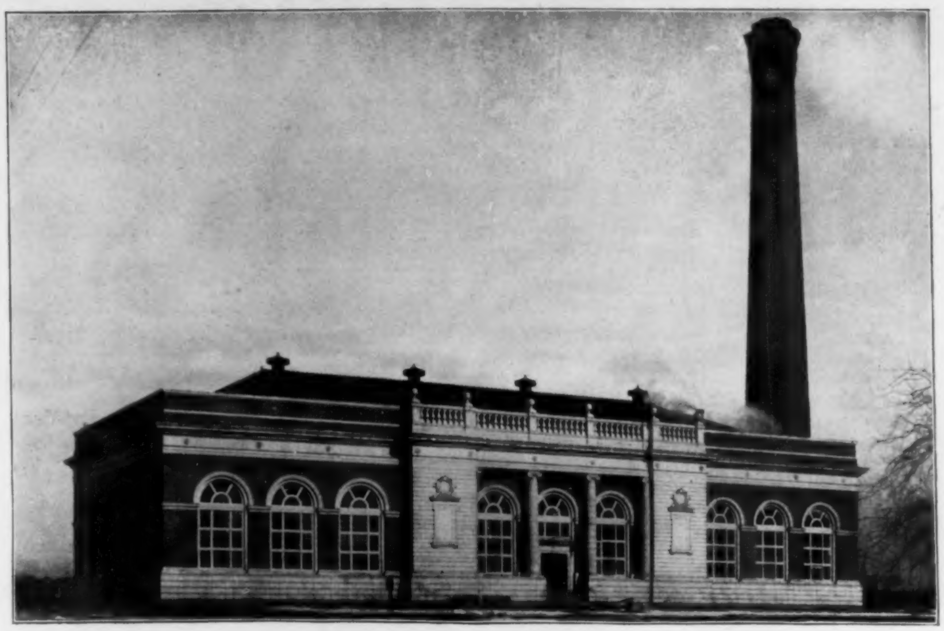
not been enough to keep pace with the progress of other large cities. At the session of the forty-third General Assembly of Illinois just closed there were passed no less than ten acts affecting the parks of Chicago. Five of them provided for the enlargement of the South Park system; one provided for the enlargement of Lincoln Park by accretions from the lake of two hundred and twenty-five acres; one provided for connecting the Lincoln and South Park systems by a boulevard, either over or under the mouth of the Chicago River, as may be hereafter determined; one bill provided for a large number of additional small parks; one provided the manner in which the New Field Columbian Museum can be located in the new Grant Park in the heart of the city and fronting on Lake Michigan; and lastly another bill made it possible to erect the new John Crerar Library on the site selected for it two years ago.

It can well be said that when Chicago does things it is not by halves. She has waited a long time for this consummation, and it has all come at once. The money to carry out all these improvements by park commissions will be provided by the issue of bonds. It will be a large sum. At the election referred to the voters confirmed the authority to issue $3,000,000 in bonds for the South Parks and $1,000,000 for Lincoln Park. An act of the General Assembly also authorized the Board of County Commissioners to issue bonds to the amount of $1,200,000 for various purposes, about $500,000 of which will be for buildings. As if this were not enough the Field Columbian Museum bills included a provision for adding a fraction of a mill to the taxation of the city, which will provide an income of about $50,000 per annum for the museum, and another $50,000 per annum for the Art Institute, which has never before been assisted from the tax levy. Then the Trustees of the Drainage Canal will be authorized to issue about $10,000,000 in bonds for the enlargement and im-

FIGURE, EXECUTED IN TERRA-COTTA BY CONKLING-ARMSTRONG TERRA-COTTA CO.
Bruce Price, Architect.

ORNAMENTAL WINDOW.
Victor Hugo Koehler, Architect.
New Jersey Terra-Cotta Co., Makers.

TERRA-COTTA GARDEN VASE.
Made by White Brick & Terra-Cotta Co.



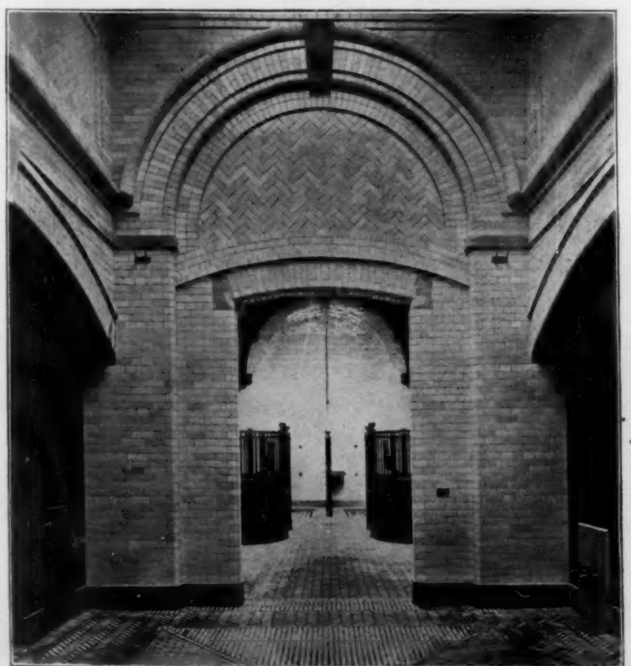
PUMPING STATION, CHICAGO.
R. Bruce Watson, Architect. Terra-Cotta made by Northwestern Terra-Cotta Co.

provement of the Chicago River and the development of power at the controlling works.

The result of this legislation in the aggregate has been to place the whole water front of Chicago on Lake Michigan for a distance of about twenty miles under control of the park boards, together with all the lands under water belonging to the state, with privilege to fill in the same where necessary.

The people of Chicago probably will not realize for some time the full value of all these acquisitions. At present they can only value them in money, employing millions for units. For instance, the park additions will cost four millions, the John Crerar Library will cost one million, and all estimates of the cost of the Field Columbian Museum are based on a prospective outlay of five millions for buildings, with a five million endowment. The County Board will expend half a million for buildings, and the Trustees of the Drainage Canal will spend ten millions more. These are rough figures, given without exact statistics for handy reference.

The greatest of all Chicago's improvements will be the new Grant Park. It is located very much as Battery Park is in New York. But to realize its possibilities we must imagine Battery Park covering the whole ground south of a line drawn east and west through Wall Street. It is one and one-quarter miles long and about half a mile wide, and will have a sea wall on the long side and one end. This is the site once talked of for the World's Columbian Exposition, and the late Mr. Root made the first sketching for the buildings for that great enterprise to be here located on piles. For economy it was proposed to leave the water under the buildings and to fill in the earth

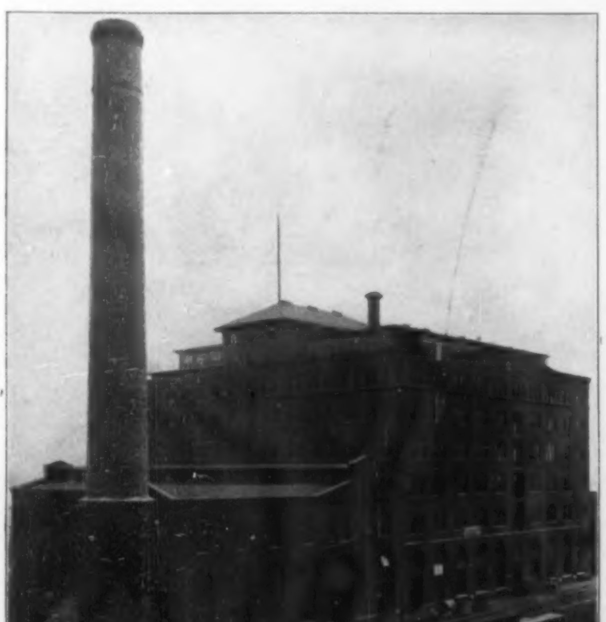


INTERIOR OF STABLE, SHOWING USE OF BLUE RIDGE ENAMEL BRICK, CREAM TINT.
Warren & Wetmore, Architects.

ENTRANCE TO DORMITORY, CINCINNATI COLLEGE OF MUSIC.
Terra-Cotta made by Indianapolis Terra-Cotta Co.
Gustave W. Drach, Architect.

HOUSES, CHICAGO.
Built of Tiffany Enameled Brick.

between them. The whole area was then without any shore protection except the government breakwater, half a mile away, enclosing the roadstead or anchorage for vessels seeking shelter from storms. In 1895, 1896 and 1897 the whole area now to be used as a park was enclosed with a cob dock, built with two rows of piles, with crib-work on top and filled in with stone. This will be the foundation of the sea wall that is to be. About half the area of the park is now filled in with dumpage from the city and some material from the drainage canal. Part of the area was retained by the state of Illinois for a drill ground and armory site, and the state has expended $100,000 within the last two years in filling it in. But that has now been turned over to the park commissioners for the use of the city, and there will be no armories on it.



PENNSYLVANIA SUGAR REFINERY, PHILADELPHIA.
Brick furnished by O. W. Ketcham.

This entire park will have to be made from nothing, and the opportunity to develop a magnificent design is extraordinary. If, by good fortune, it should grow into a thing of beauty, it is safe to say that it will be a great surprise to the people of Chicago, for its possibilities are beyond the conception of even the best informed men and women.

NEW YORK INSPECTOR OF BUILDINGS.

MR. WALTER T. SMITH, who has for several years held a position as superintendent for Carrère & Hastings, and who had general oversight of the construction of the buildings at Buffalo for the Pan-American Exposition, has been appointed to the position of chief inspector of buildings in New York City. This appointment was made by Mr. Thompson, the new superintendent

FIDELITY TRUST BUILDING, BUFFALO.
Brickwork and Fireproofing laid in Akron Star Brand Cement.
Green & Weeks, Architects.

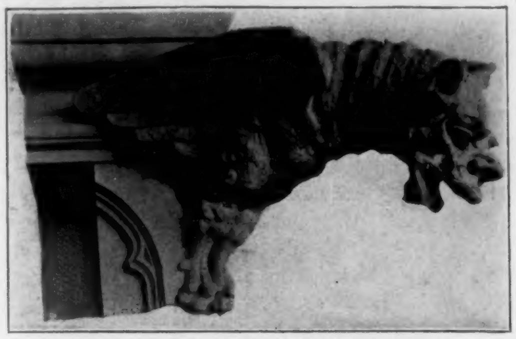
of buildings, upon the nomination of a number of the leading architects of New York City. However much we might wonder at an architect of so much experience and ability being willing to accept a political appointment of this sort, we can certainly congratulate the city most heartily upon securing his services, and the superintendent has taken a most wise course in acting in coöperation with the architects of the city.

IN GENERAL.

What is probably the largest architectural commission ever awarded in the building line to a Boston firm has just come to Cram, Goodhue & Ferguson, who have been selected as architects to remodel the buildings and

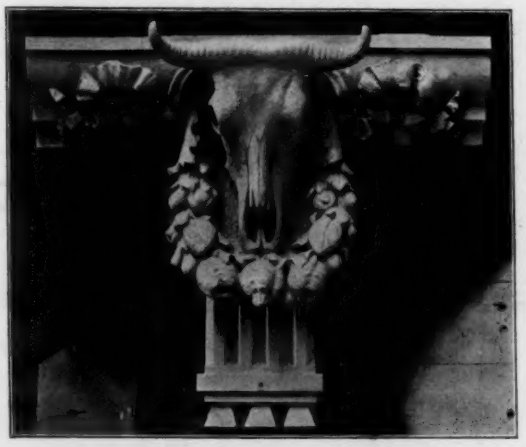
grounds of the military academy at West Point. The work will involve an outlay of $5,500,000.

The committee selected to pass upon the plans submitted in competition consisted of General Schofield, president of the West Point Alumni Association; Col. A. L. Mills, superintendent of the academy; George B. Post, Cass Gilbert and Walter Cook, all architects of New York. The committee was unanimous in its selection of the plans of the Boston firm, and its choice was last week ratified by the secretary of war.



DETAIL BY GEORGE H. STREETON, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

Francis S. Swales is announced as the winner of the Washington University Traveling Scholarship, Albert D. Millar receiving Honorable Mention. The competition consisted of three rendered and three sketch problems. For a special study Mr. Swales has chosen the great theaters of Europe.



DETAIL BY CLINTON & RUSSELL, ARCHITECTS.
Standard Terra-Cotta Works, Makers.

Charles T. Harris has retired from the office of president of the Celadon Roofing Tile Company and is succeeded by William R. Clarke, former first vice-president and treasurer. Mr. Clarke has been actively engaged with the company since its inception in 1888, and is admirably fitted both by experience and ability to take charge of its large and growing business. He is succeeded by C. Layton Ford as first vice-president, and by E. S. Marvin, former superintendent of the American Temperance Life Insurance Association, as treasurer. Both of these gentlemen have taken large interests in the company. Henry S. Harris, second vice-president, and Alvord B. Clarke, general manager, remain in charge of the Chicago office and Western Department.

A copartnership has been formed by Henry H. Meyers and Clarence R. Ward, architects, 532 Market Street, San Francisco. They desire samples and catalogues from material men.

DETAIL BY HEINS & LA FARGE, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

A. J. Blix, architect, has opened an office at 17 Fifth Avenue S., St. Cloud, Minn., and desires manufacturers' catalogues and samples.

William H. Gruen, architect, St. Louis, has taken offices in the Chemical Building, and desires manufacturers' catalogues and samples.

The Monks Building and the Home for Crippled Children, Boston, Peabody & Stearns, architects, will be built of Sayre & Fisher Company brick; also the new library at Marlboro, Mass., by the same architects. A large quantity of their enameled brick will be used in the new Edison Building, Boston, Winslow & Bigelow, architects, and the Penn Mutual Insurance Building, Boston, E. V. Seeler, architect.

DETAIL BY HERTS & TALLANT, ARCHITECTS.
Perth Amboy Terra-Cotta Company, Makers.

Competition for a Public Library

First Prize, $500 Second Prize, $200 Third Prize, $100

PROGRAM

IT is assumed that a public library is to be presented to a town located in the middle west. This town occupies a picturesque position in a rolling country bordering one of the Great Lakes and is the seat of a small but important college. The public square is a park which is assumed to be 300 feet wide and upwards of 1,000 feet long. At one end is already built the town hall, and at the opposite end will be placed the library. The ground rises gently towards the proposed site, so that the position will be a commanding one. The whole frontage of 300 feet will be given to the library and its approaches, and the entire depth of the lot is 200 feet. The total rise from the curb line to the center of the lot is 10 feet, and the grade falls off towards the rear 1 foot in 40. Sidewise the grade falls off equally each way from the center 10 feet to the boundary lines. The building must set back a distance of 75 feet from the front line, and the approach must be treated in an architectural manner.

The exterior of the building is to be designed entirely in terra-cotta, and colored terra-cotta or faience may be introduced as a feature of the design.

The following accommodation is to be provided for in plan. The dimensions given are only approximate and may be modified as required by the exigencies of the design:

First Story. Vestibule, 200 sq. ft.; periodical room, 1,000 sq. ft.; reference library and reading room, 1,000 sq. ft.; general delivery room, 600 sq. ft.; trustees' room, 350 sq. ft.; librarian's room, 350 sq. ft.; stack room, 1,500 sq. ft.

Second Story. Children's room, 500 sq. ft.; music room, 500 sq. ft.; exhibition room, 500 sq. ft.; two rooms for special collections, 500 sq. ft. each.

It is assumed that the lavatories, storerooms, etc., are all to be located in the basement, which is to be raised sufficiently above the finished grade to allow of fair lighting. The stairs leading to the second story are to be double, but are not to be made a prominent feature. It will be assumed that the heating plant is entirely distinct from the building, there being consequently no provision made for a chimney, but space should be provided for ample ventilation flues.

Drawings Required. A perspective, taken from the left corner of the building, with the picture plane forming an angle of 30 degrees with the main line of the front, and also sketch plans of the first and second floors at a scale of 1-32 in. to the foot. The perspective is to show treatment of approaches. These drawings to appear upon one sheet 16 in. wide and 20 in. high, the perspective to be placed in the upper three-quarters of the sheet and the plans in the lower quarter of the sheet. Details, drawn at a scale of 3-4 in. to the foot, showing the character of the design and the construction of the terra-cotta, are to be shown on another sheet of the same size, *i. e.,* 16 in. wide and 20 in. high. These drawings are to be made in black ink without wash.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra-cotta. No limitation of cost need be considered, but the designs must be made such as would be suitable for the location, for the character of the building and for the material in which it is to be executed. The details should indicate in a general manner the jointing of the terra-cotta and the sizes of the blocks.

In awarding the prizes the intelligence shown in the constructive use of terra-cotta will be a point taken largely into consideration.

Every set of drawings is to be signed by a nom de plume or device, and accompanying same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before October 31, 1903.

The designs will be judged by three well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.

For the design placed second a prize of $200

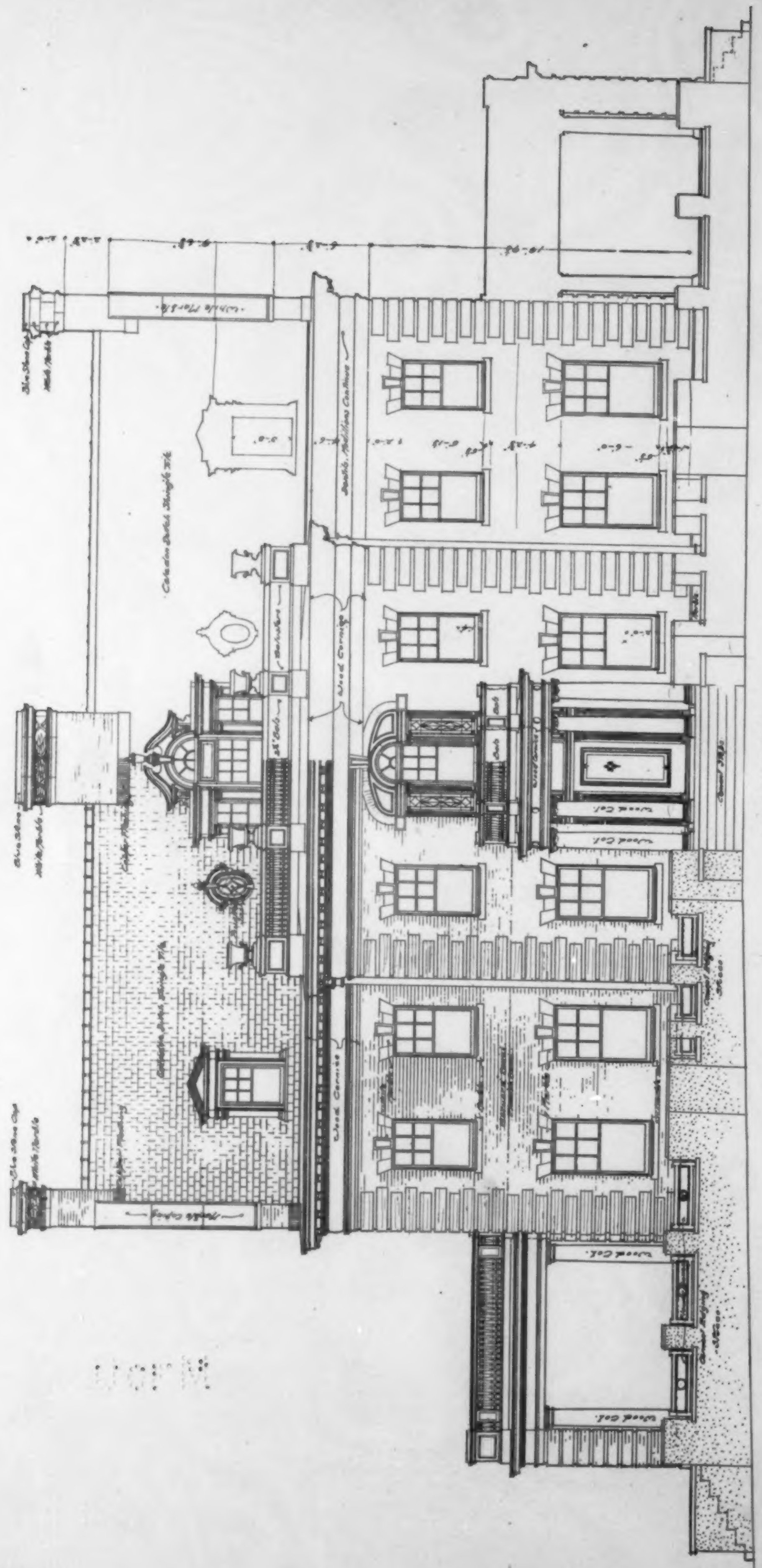
For the design placed third a prize of $100.

All drawings submitted in this competition are to become the property of THE BRICKBUILDER, and the right is reserved to publish any or all of them.

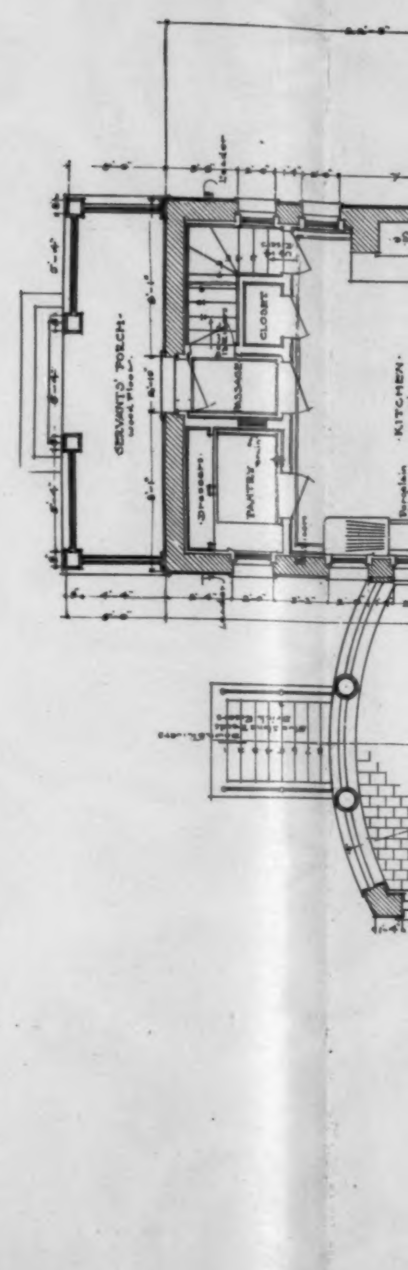
We are enabled to offer prizes of the above-mentioned amounts largely through the liberality of the terra-cotta manufacturers who are represented in the advertising columns of THE BRICKBUILDER.

This competition is open to every one.

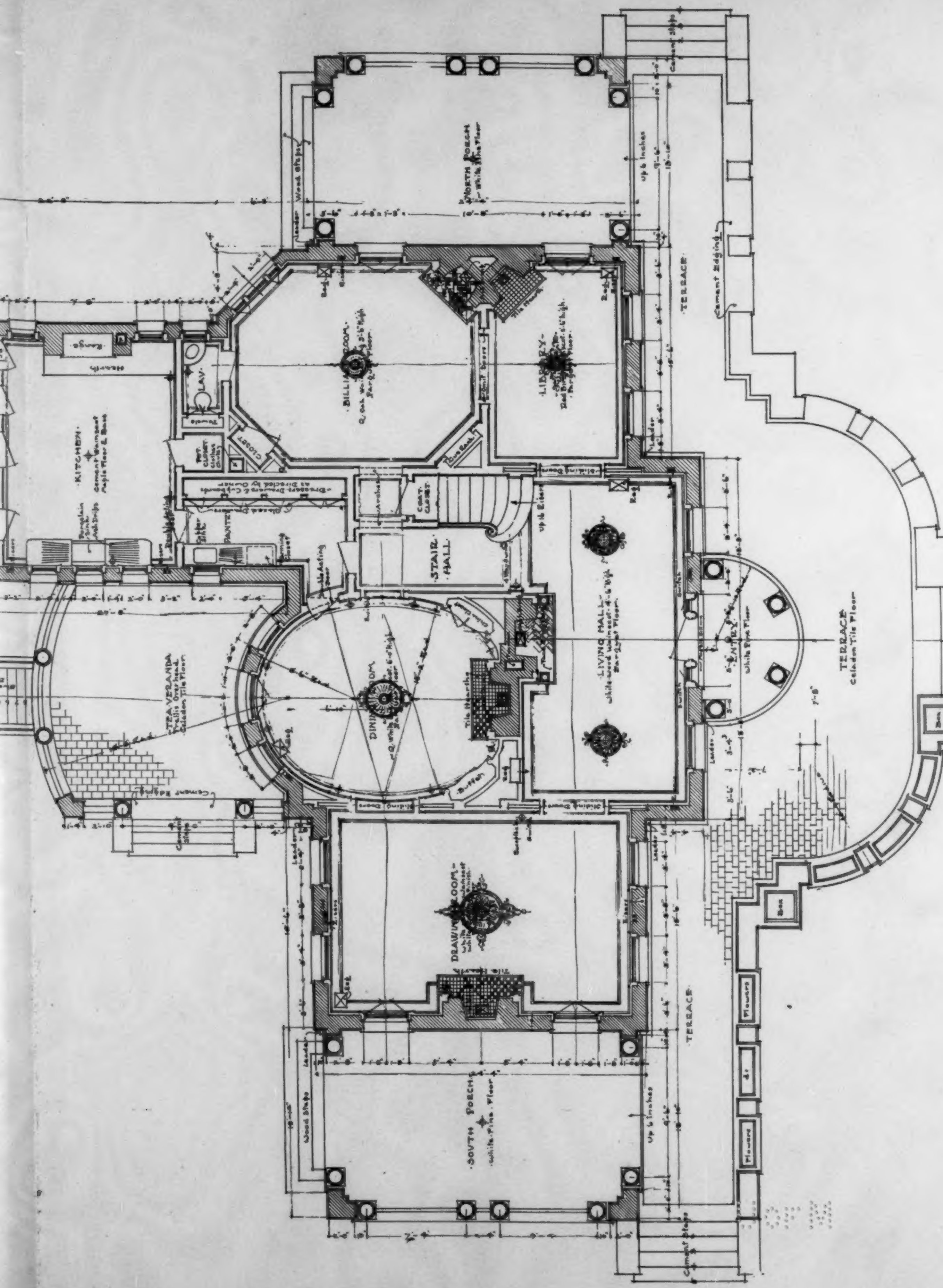
VOL. 12. NO. 6.



FRONT ELEVATION.



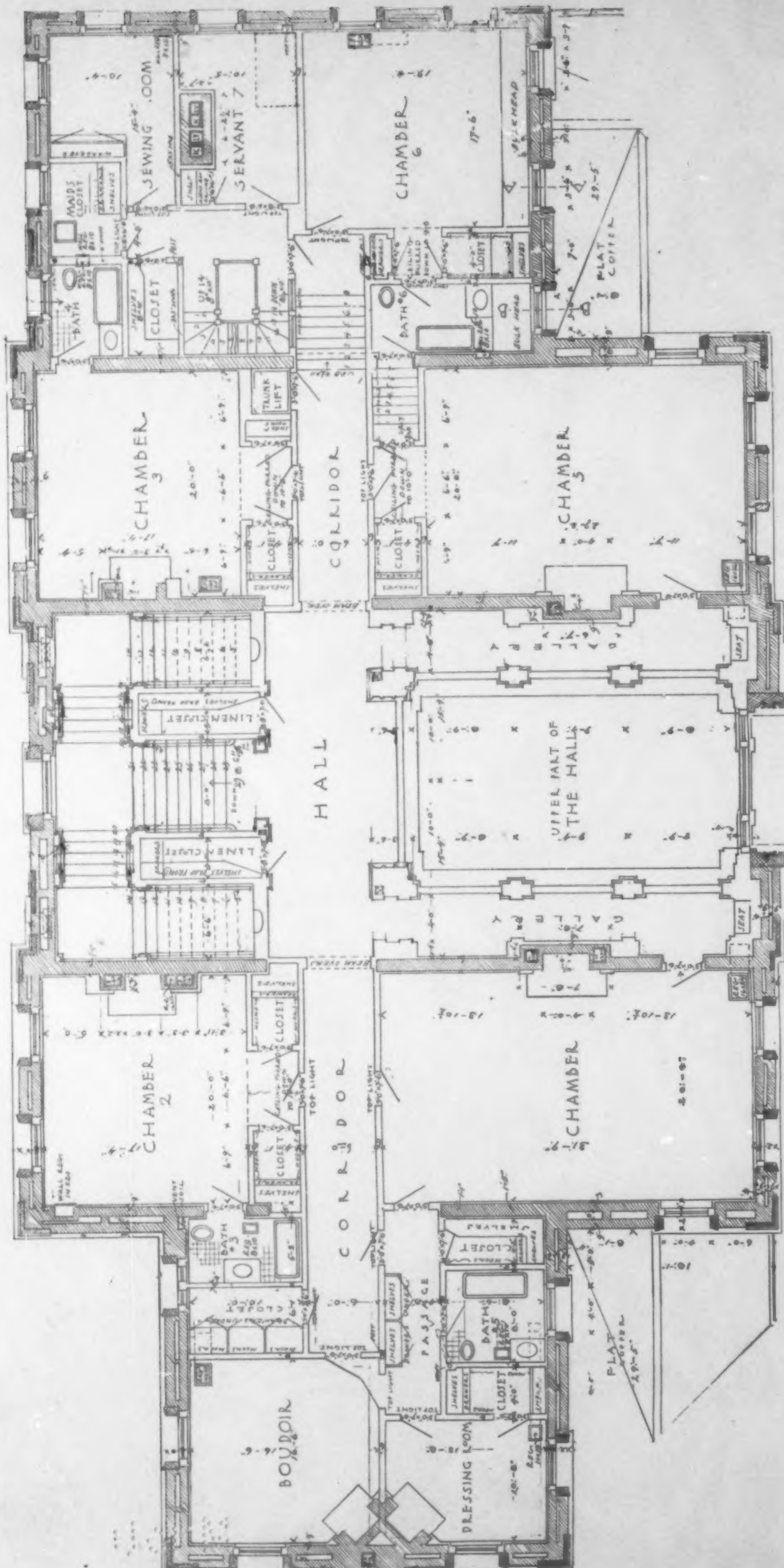
PLATES 41 and 48.



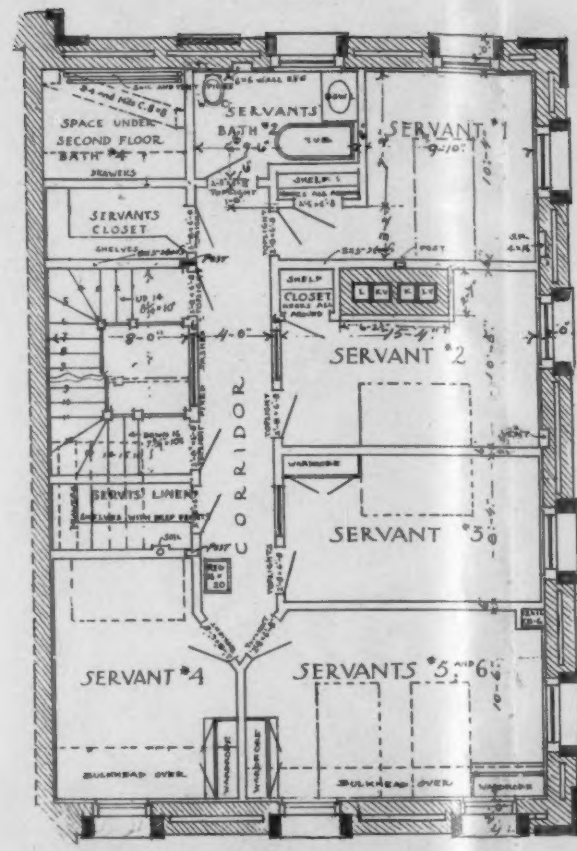
-FIRST-FLOOR-PLAN-

HOUSE AT LARCHMONT MANOR, N. Y.

WARD W. WARD, ARCHITECT.

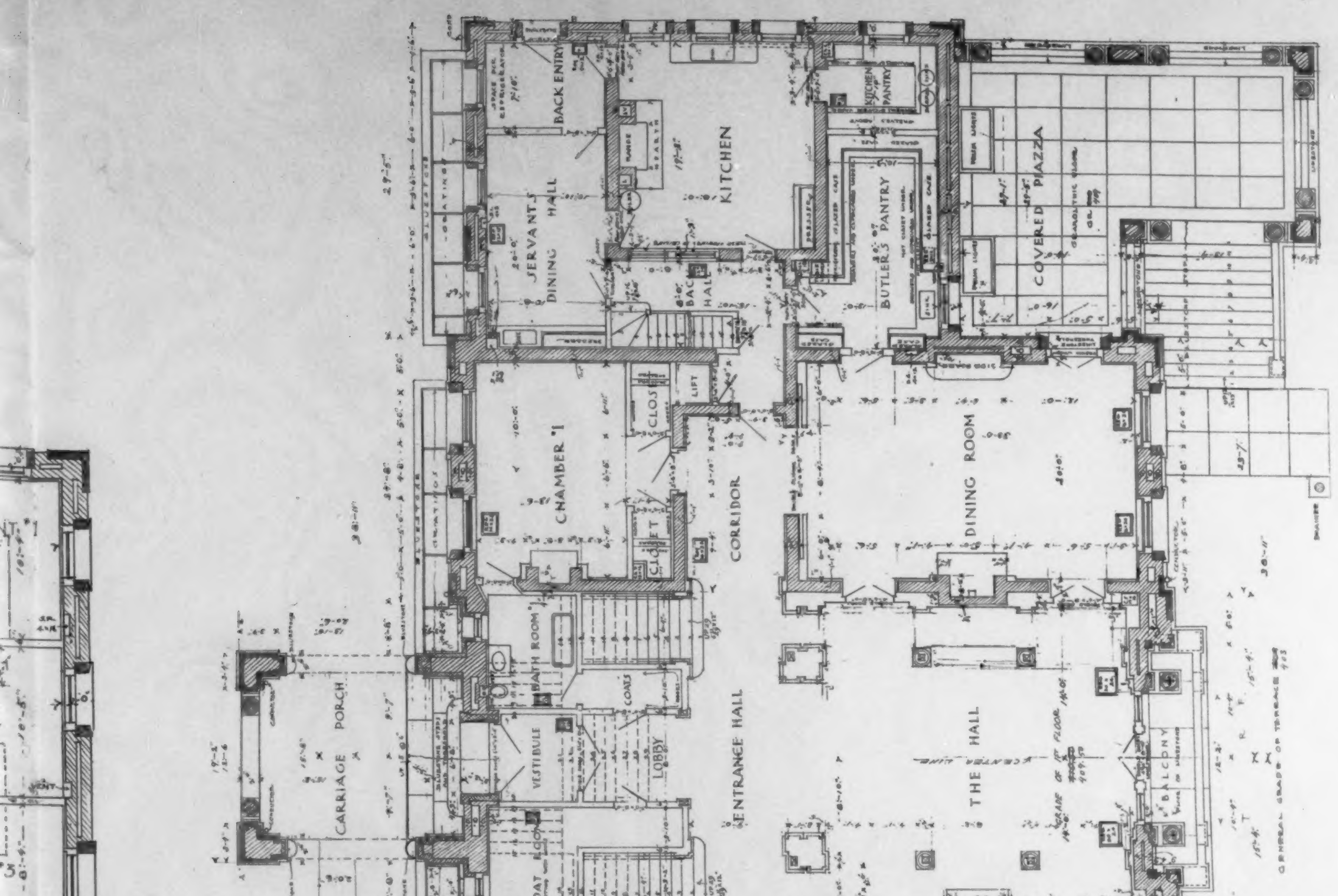


SECOND FLOOR PLAN.



MEZZANINE, SERVANTS' WING.

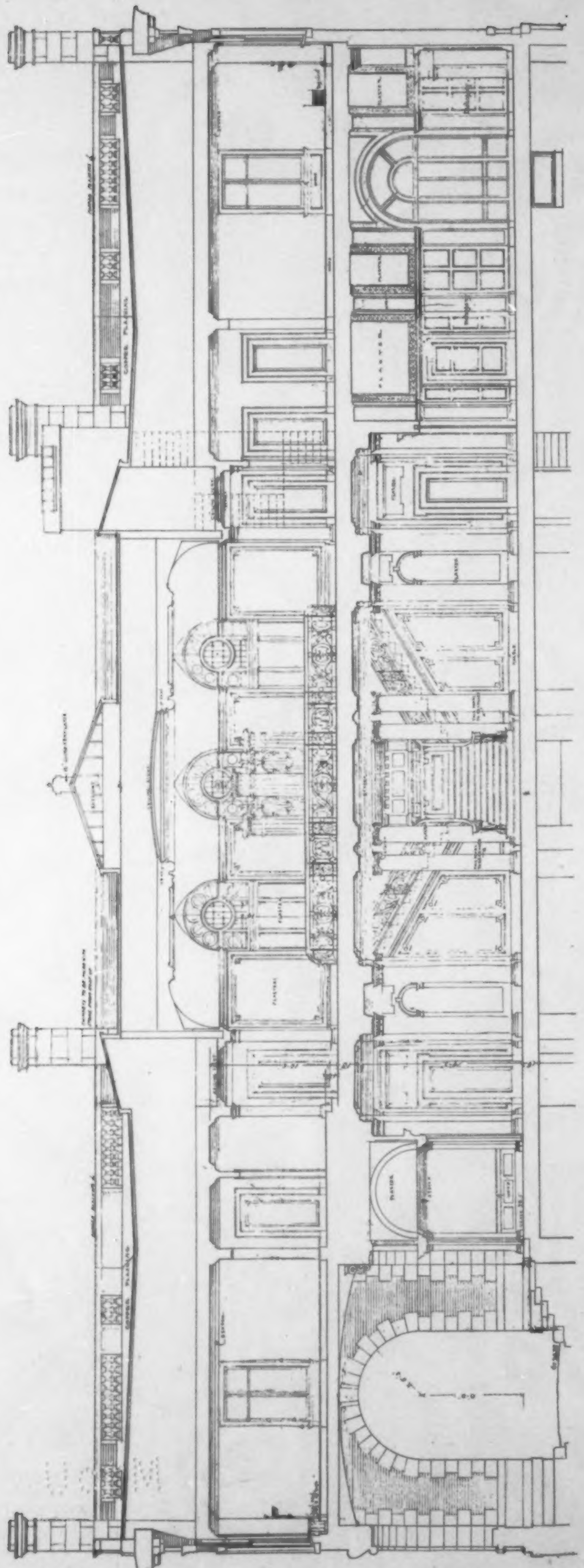
PLATES 42 and 47.



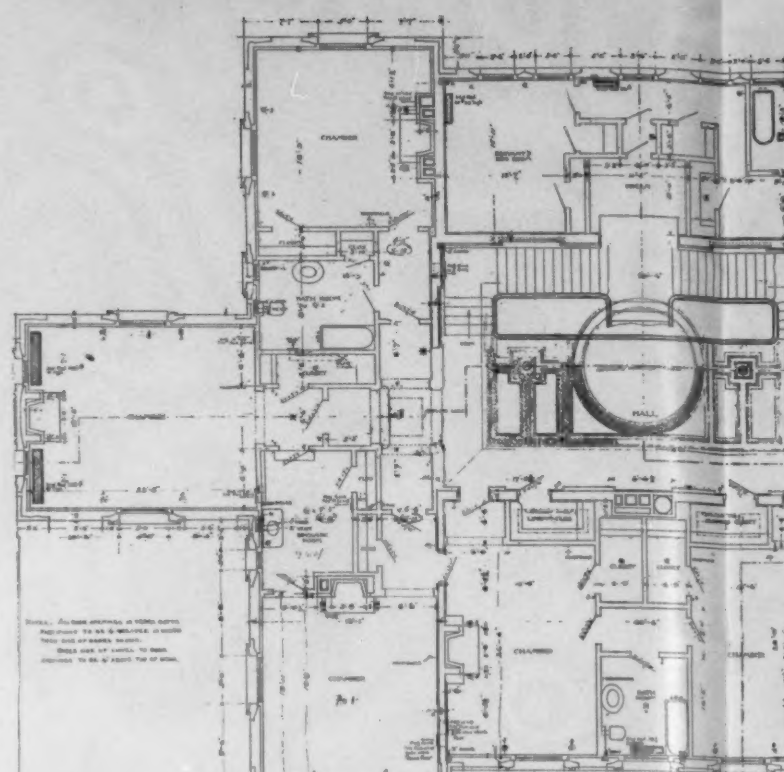
FIRST FLOOR PLAN.

PLANS, HOUSE AT RADNOR, PA.

PEABODY & STEARNS, ARCHITECTS.



LONGITUDINAL SECTION.



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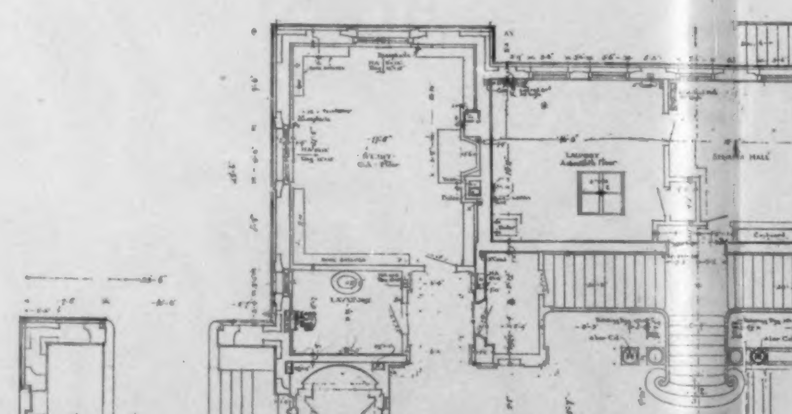
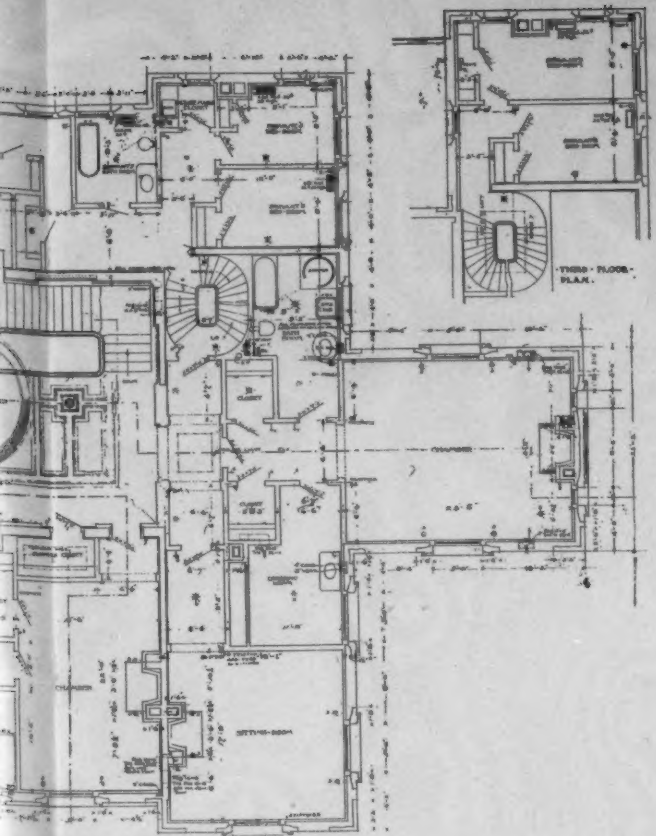
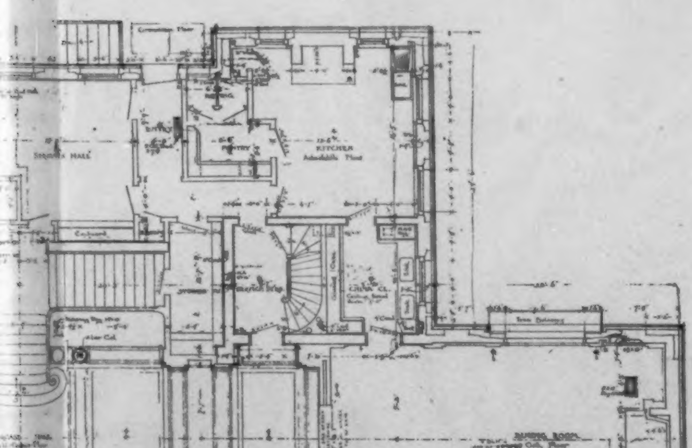


FIRST FLOOR PLAN.

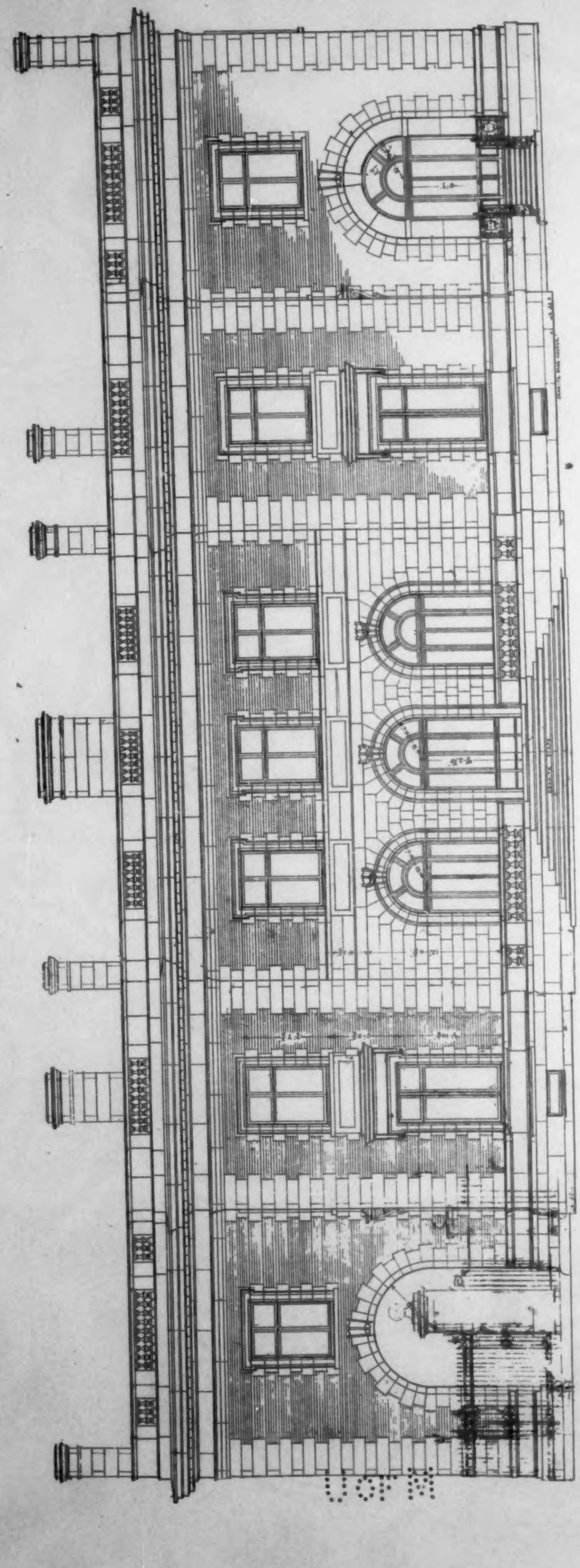
PLATES 43 and 46.



FLOOR PLAN.



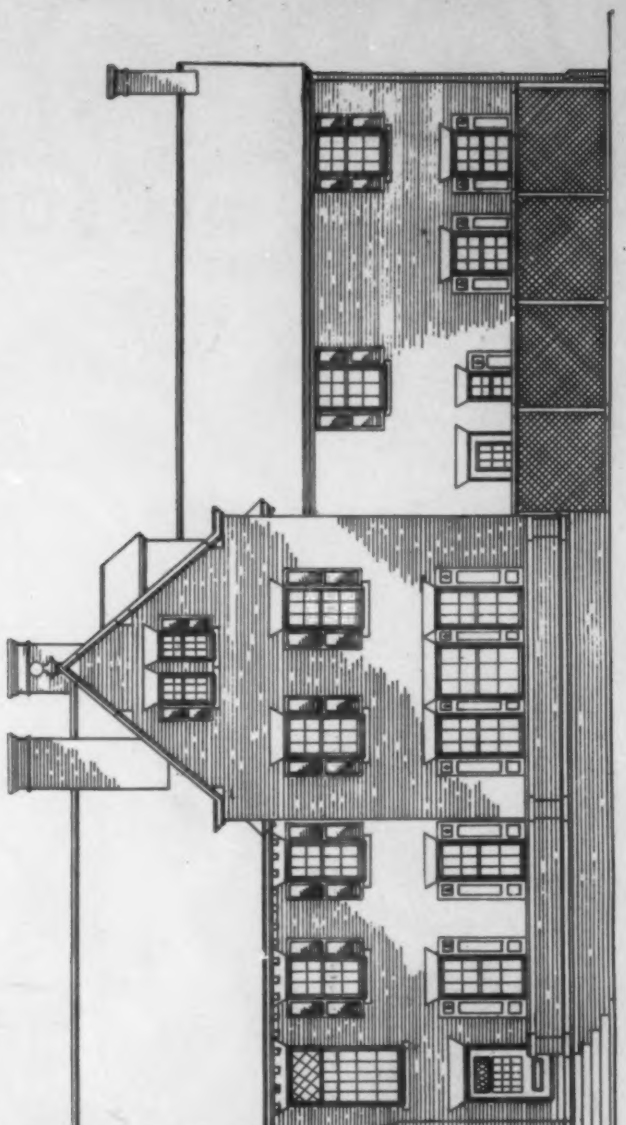
FLOOR PLAN.



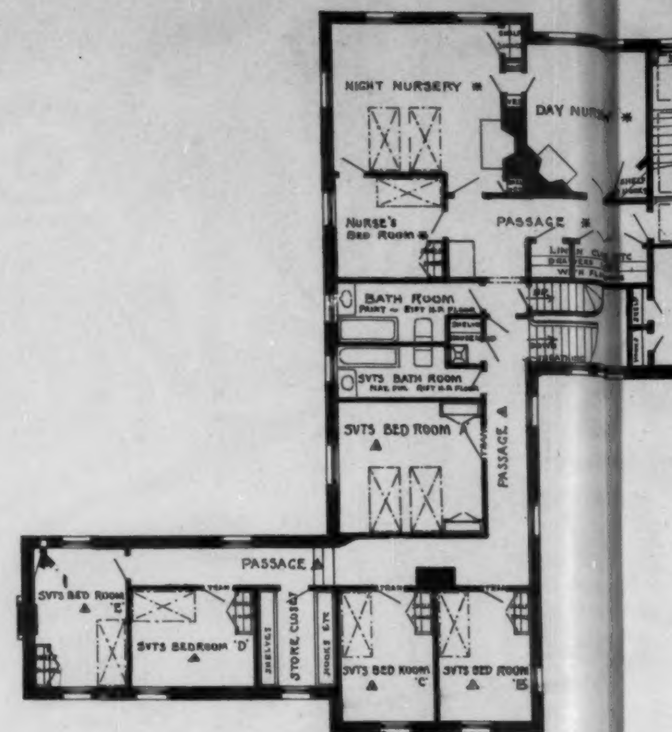
FRONT ELEVATION.

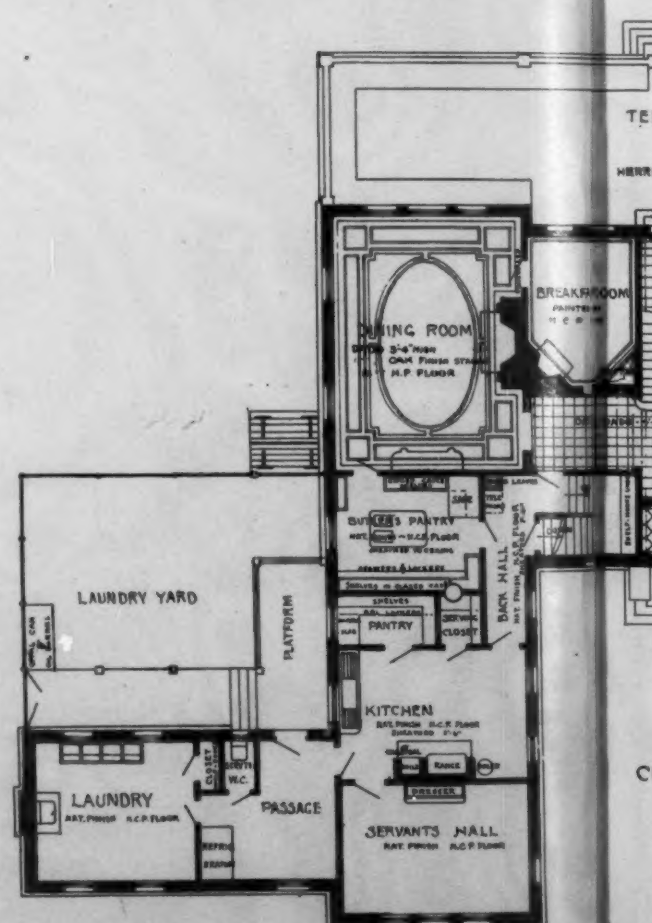
HOUSE AT BROOKLINE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

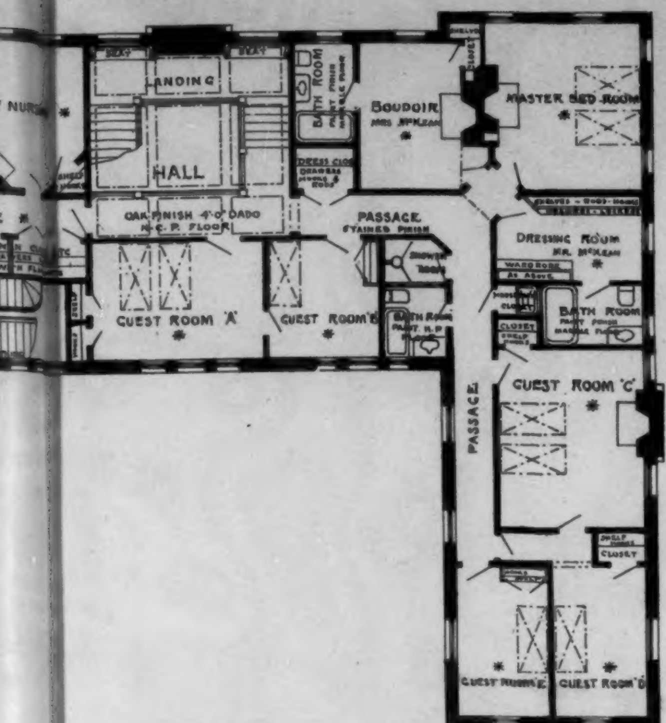


REAR ELEVATION.

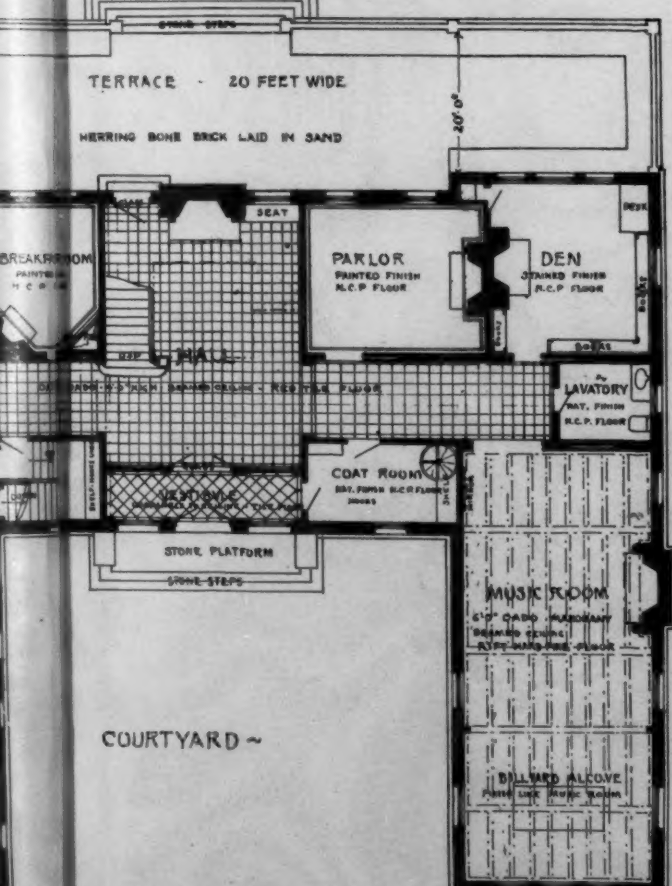




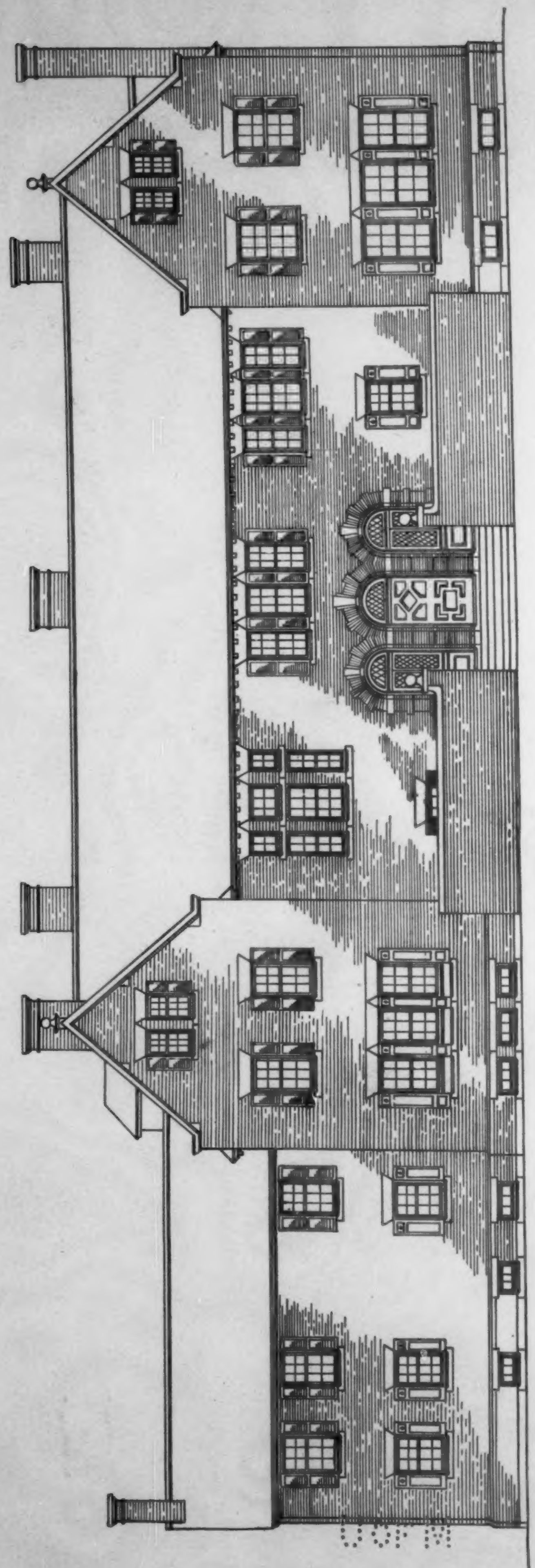
PLATES 44 and 45.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.



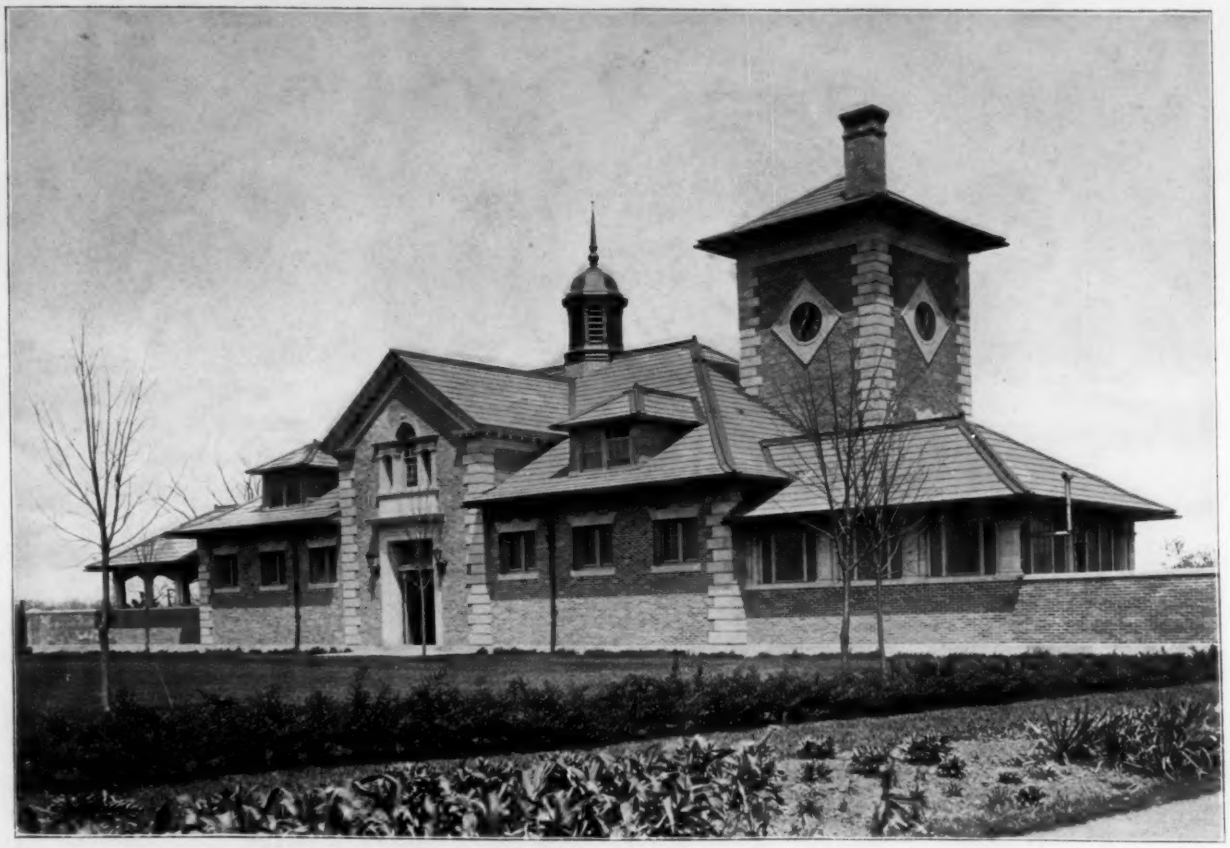
FRONT ELEVATION.

HOUSE AT PENLLYN, PA.

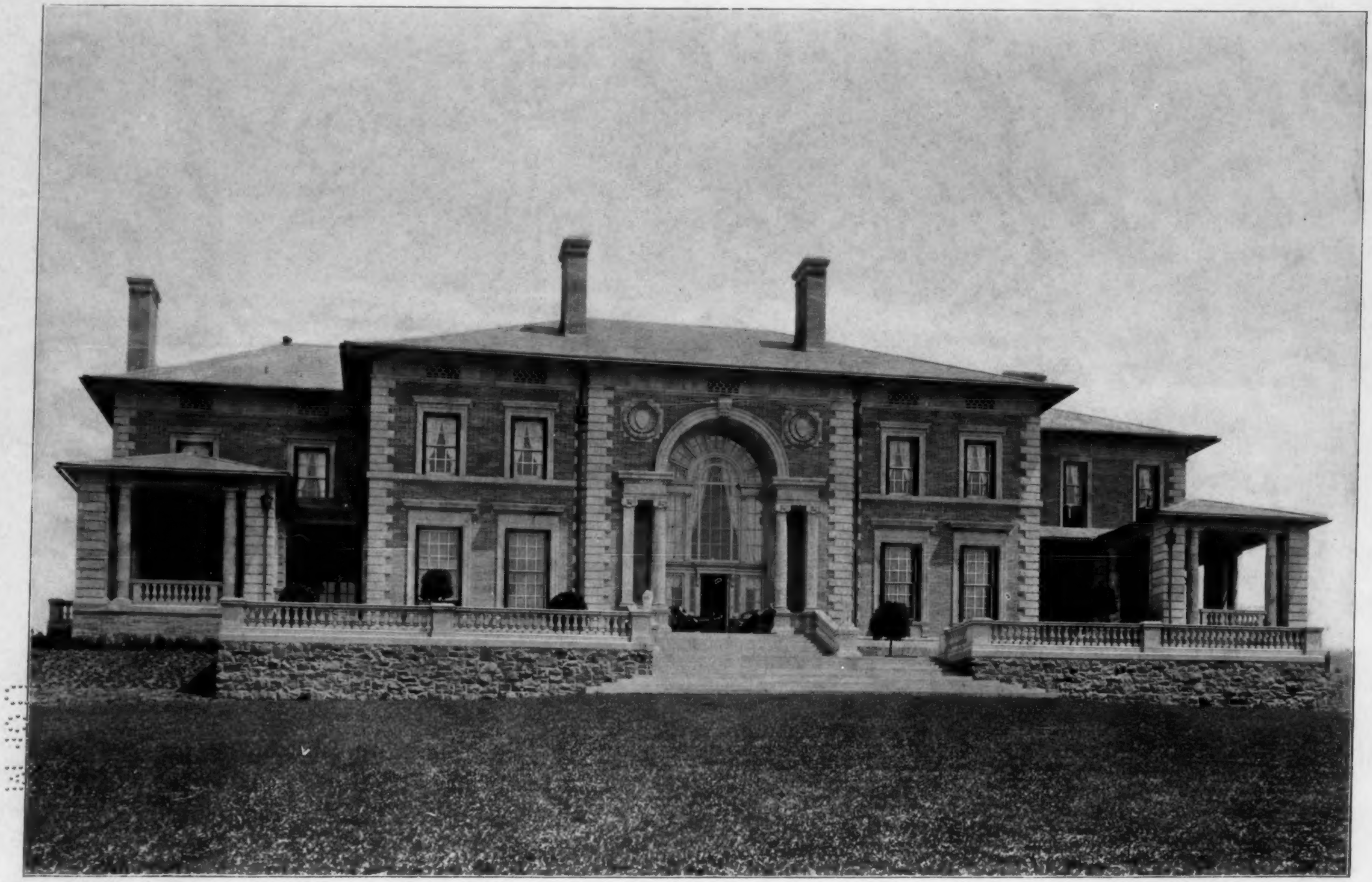
A. W. LONGLELLOW, ARCHITECT.

HOUSE AT PENLLYN, PA.
A. W. LONGFELLOW, ARCHITECT.

HOUSE AT LARCHMONT MANOR, N. Y.
WARD W. WARD, ARCHITECT.

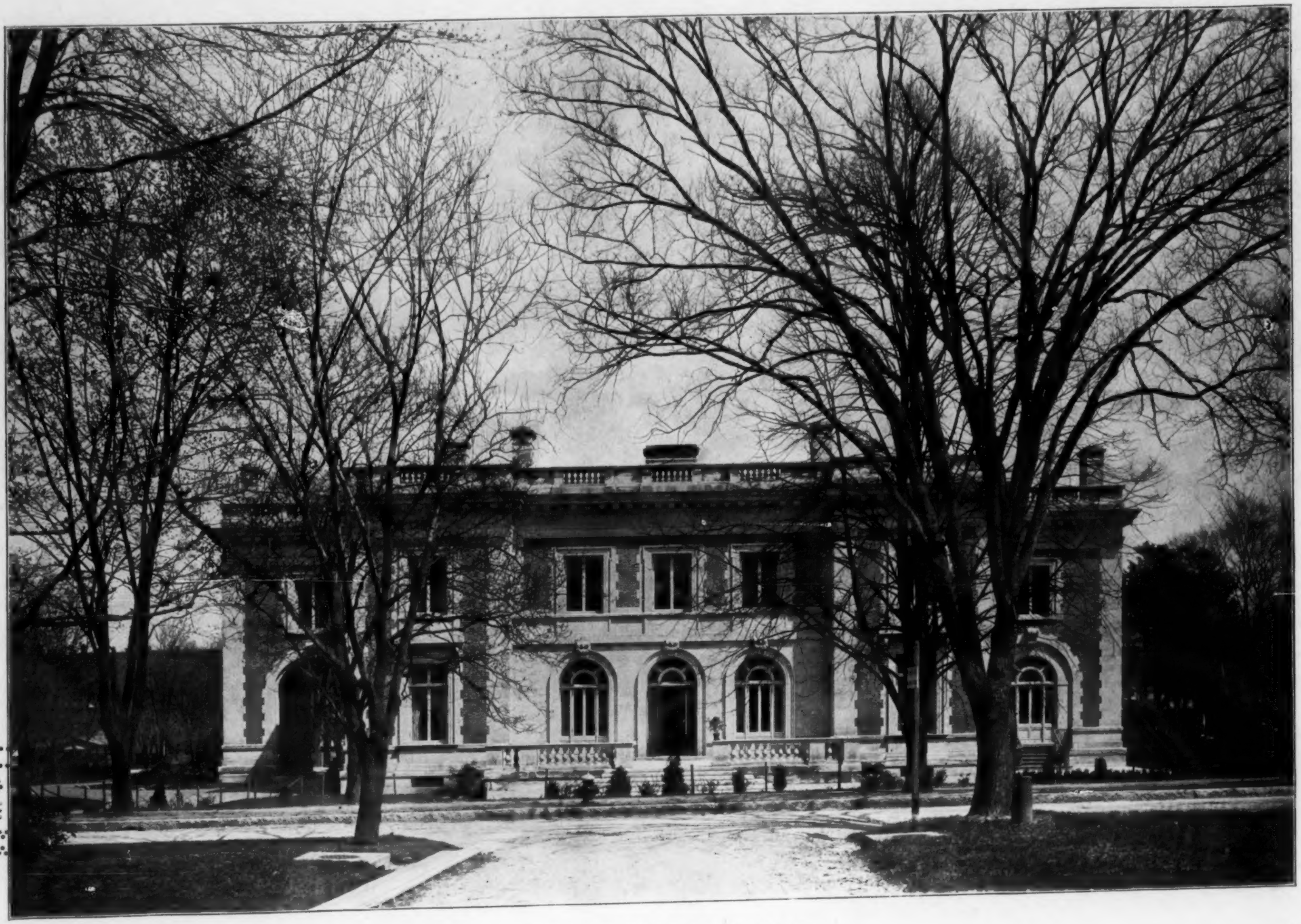


HOUSE AND STABLE, RADNOR, PA.
PEABODY & STEARNS ARCHITECTS.

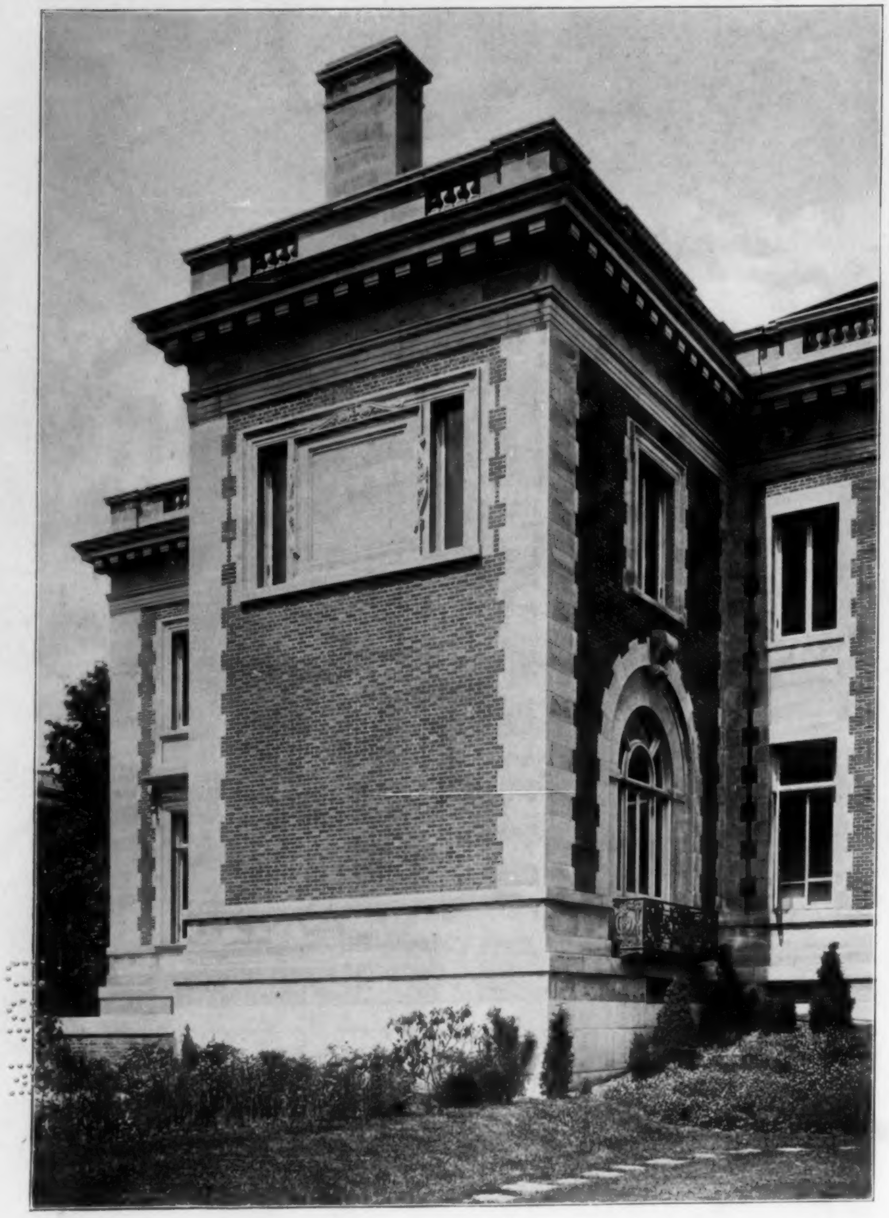


HOUSE AT RADNOR, PA.

PEABODY & STEARNS ARCHITECTS.



HOUSE AT BROOKLINE, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



DETAILS, HOUSE AT BROOKLINE, MASS.

SHEPLEY RUTAN & COOLIDGE, ARCHITECTS.